620

Contractors and Engineers

magazine of modern construction

DECEMBER
1955

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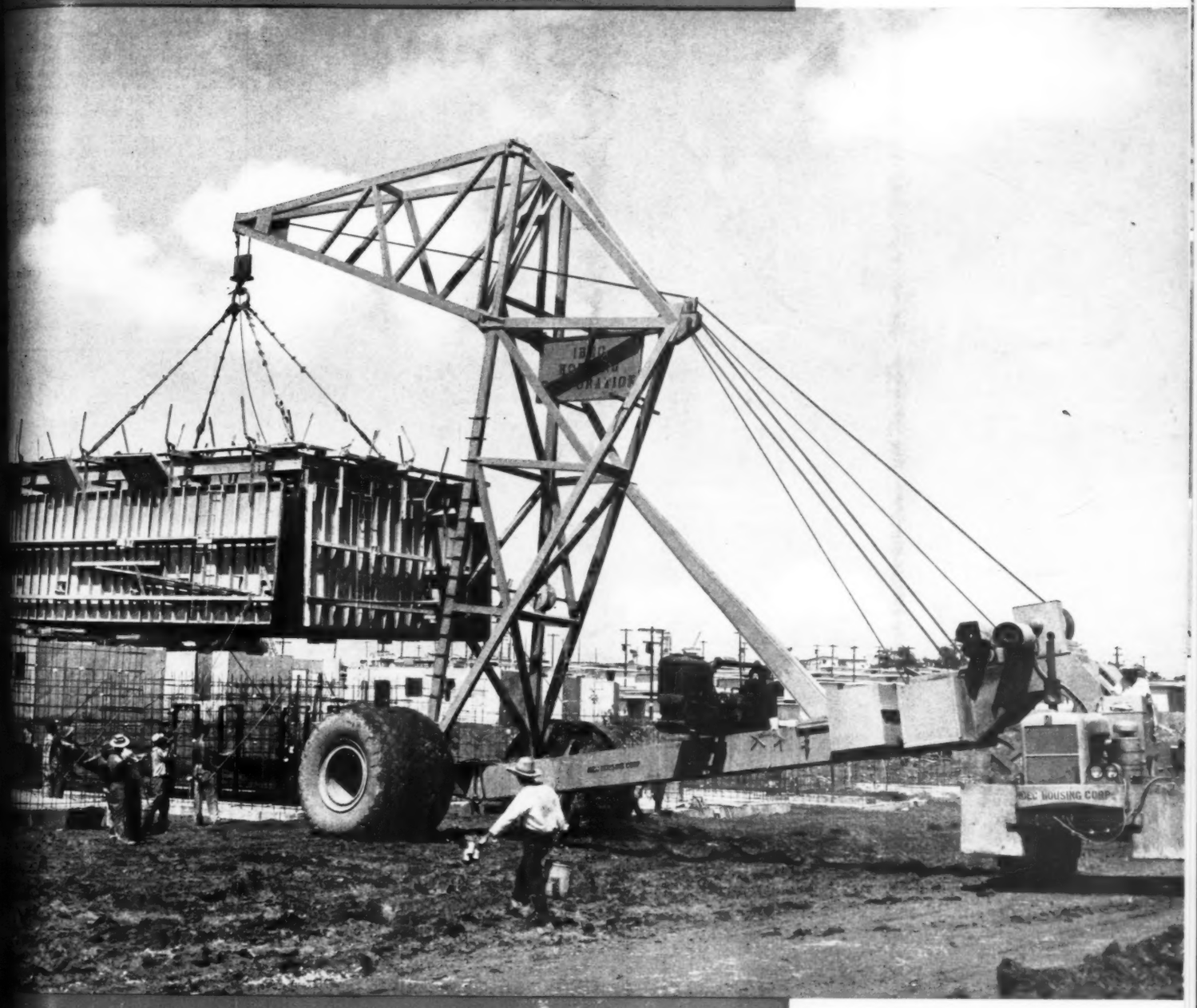


Specially designed Blaw-Knox forms, weighing 35 tons, are set in place over wall reinforcing by a LeTourneau "bomber crane" working on a 1,583-home Puerto Rican housing project. The forms permit exterior and interior bearing walls to be poured monolithically in a single day. *Page 6*

How Concrete Of Required Workability Can Be Obtained Most Economically

As every concrete man knows, obtaining increased workability by adding water has two serious disadvantages. First, it increases the cost of the concrete because more cement is required to maintain strength. Second, it lowers the quality of the concrete because it increases shrinkage and permeability and decreases durability.

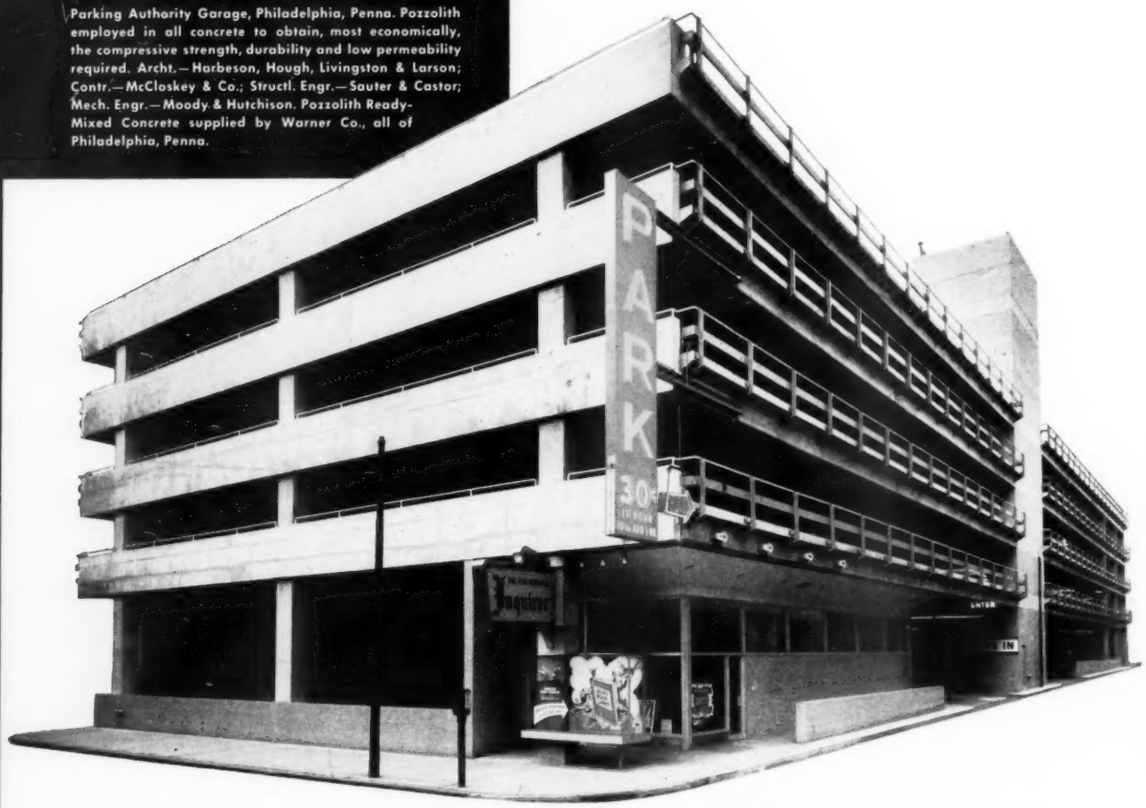
Experience on thousands of jobs has proved that the best and most economical way to obtain required workability is with Pozzolith. When Pozzolith is added to a plain mix, slump is increased 150% or more.

For equal slump, approximately one gallon (15%) less water per sack of cement is required for a Pozzolith mix. Plasticity is improved . . . less time is required for placing and finishing.

In addition to providing required workability most economically, Pozzolith reduces shrinkage, lowers permeability and increases durability, because Pozzolith is the key to producing concrete with the lowest possible *unit water content* (water required per cubic yard of concrete).

500-CAR PARKING GARAGE

Parking Authority Garage, Philadelphia, Penna. Pozzolith employed in all concrete to obtain, most economically, the compressive strength, durability and low permeability required. Archt.—Harbeson, Hough, Livingston & Larson; Contr.—McCloskey & Co.; Structl. Engr.—Sauter & Castor; Mech. Engr.—Moody & Hutchison. Pozzolith Ready-Mixed Concrete supplied by Warner Co., all of Philadelphia, Penna.



Engineers Specify POZZOLITH To Improve Control of Concrete Quality

POZZOLITH... *the key to-*

- lowest possible unit water content*
- close control of entrained air... placing consistency... rate of hardening
- reduced costs

*For a given set of materials and water-cement ratio, unit water content (water required per cubic yard of concrete) is the most important basic factor affecting the quality of concrete. A.C.I., Committee 613, 1944 Report, Page 655. Bureau of Reclamation Concrete Manual, Page 130, 5th edition.

Parking garages and other commercial buildings...industrial plants, schools and hospitals...are among the outstanding structures built since 1932 in which Pozzolith has enabled engineering to better control concrete quality.

Engineers and architects employ Pozzolith with confidence because:

1. ***proved performance***...100 million cubic yards of concrete produced with Pozzolith for all types of jobs.

2. ***applied know-how***...over 70 skilled Master Builders' field technical men for product-use consultation.

3. ***available everywhere***...1000 ready-mix and job-site plants now producing concrete with Pozzolith.

Ask us to demonstrate the advantages of Pozzolith for your project.

The MASTER BUILDERS Co

Subsidiary of American-Marietta Company

For more facts, use Reader-Reply Card opposite page 18 and circle No. 201

FLOORS THAT WEAR 4-6 TIMES LONGER

Many million square feet of Masterplate armored floors in service in America's leading plants show that Masterplate floors are 4-6 times more wear-resistant than the best plain concrete floor.

"Iron-clad" Masterplate floors are also non-dusting, corrosion-resistant, easy-to-clean, non-slip and spark-safe. (Static-disseminating, spark-resistant floors are produced with DFS Masterplate.) Non-colored and colored.

Section of Masterplate Floor Note Thickness of Armored Surface

Experience has proved the value of Masterplate armored floors in helping to maintain a smooth flow of production, reduce maintenance expense and improve plant safety.

Only with Masterplate can an "iron-clad" Masterplate floor with all of its service advantages be obtained. This is because only Masterplate contains Master Builders exclusive cement-dispersing agent which makes it possible to float easily a pound or more of the tough, ductile metal on fresh concrete and keep it at the surface. (Available as Standard Masterplate and Ready-4-Use Masterplate — a complete product, ready to use as it comes from the package.)

Full information on Masterplate—for new floors and resurfacing old concrete floors—and "see-for-yourself" demonstration kit supplied on request by the manufacturer, The Master Builders Co., Cleveland 3, Ohio.

NON-SHRINK MORTAR FOR LASTING CONCRETE REPAIRS

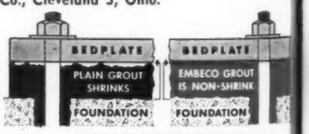
All plain cement-sand mortars shrink, leaving voids and capillaries as convenient passages for water penetration. Shrinkage may cause mortar to crack and lose bond.

Embeco Pre-Mixed Mortar provides a mortar of easy placeability that is non-shrink, assuring a strong bond between old mortar or concrete and new mortar. Repairs made with Embeco Pre-Mixed Mortar are dense and tough and resist water penetration.

Embeco Pre-Mixed Mortar is ready-to-use —add only water and mix.

Typical uses of Embeco Pre-Mixed Mortar: patching concrete floors, steps, walks; repointing wall and floor cracks; grouting around pipes through walls; tuck pointing; caulking joints between floor slabs and basement walls; joints of concrete pipe; repair of brick and tile floor joints; etc.

A 4-page folder on Embeco Pre-Mixed Mortar covering applications, advantages, pictorial directions and estimating data may be obtained from the manufacturer, The Master Builders Co., Cleveland 3, Ohio.



EMBECO PRE-MIXED GROUT FOR NON-SHRINK GROUTING

To avoid shrinkage—principal cause of failure in equipment grouts—plant engineers use Embeco Pre-Mixed Grout, the product that is easier to use and provides a non-shrink, long-life grout.

Cross-section shows how an easily placed flowable Embeco Pre-Mixed Grout counteracts shrinkage to produce full contact with bedplate.

Embeco Pre-Mixed Grout is ready-to-use—add only water and mix. Uniformly superior results are assured because: (a) all ingredients are accurately proportioned and thoroughly blended (b) cement is quality-tested, and (c) clean, sharp, scientifically graded sand, specially formulated in Master Builders factory for the recommended applications, is used. Embeco Pre-Mixed Grout is recommended for grouting heavy equipment, machinery, anchor bolts, building columns, bridge seats and similar applications.

An 8-page illustrated folder on Embeco Pre-Mixed Grout describing measurable characteristics, grouting of heavy equipment, mixing, placing of grout, common methods of grouting and forming, cold and hot weather grouting, etc. may be obtained from the manufacturer, The Master Builders Co., Cleveland 3, Ohio.

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EDITORIAL

End of State Maintenance

Almost apologetically, a small sign at the city limits reads "End of State Maintenance" and a well maintained paved highway suddenly merges into a city street not in top-notch repair. The motorist passing the sign has to slow down, turn sharp corners, stop for traffic signals, cope with local traffic, and obey signs saying "No Left Turn," "No Parking," "One Way." His reaction is likely to be one of resentment against the city.

But to the person who understands the position of cities, the "End of State Maintenance" sign arouses indignation, not against the city, but against the conditions that make the sign necessary.

In most cases, cities are the stepchildren of the states, organized under state laws that define their obligations and restrict their incomes. These laws were adopted long ago, when the nation was primarily agricultural and the cities were little more than marketing places. The laws persist today, when rurally dominated legislatures consistently block attempts by urban interests to modify state constitutions and laws to fit today's needs.

Under these laws, city streets are built and paid for by the abutting land owner, and improvements made on them are paid by the land owner through assessments or taxes. A substantial part of highway revenues from state gasoline and registration taxes, as well as federal taxes on gasoline, oil, tires, and automobiles, comes from motorists using city streets, but little or none of it is returned to the cities.

Many state highway officials remain apathetic toward this problem, since the state law says a highway terminates at city limits and the law can be changed only by the legislature. But legislators frequently seek the advice of highway officials on highway matters, and for this reason, such officials are in the best position to disseminate information that would influence legislation in favor of the cities.

There is still an almost unlimited need for highway construction and improvement in rural areas. But in proportion to traffic volume, the amount of work done on rural roads far exceeds improvements made to average urban streets. Spending some of the state and federal tax revenue on city streets would help greatly in overcoming bottlenecks in the overall highway system.

A more equitable distribution of highway-user taxes would benefit many. Cities would get much needed relief and, though taxes might not be lowered, better street systems could be built and maintained. Though highway departments would lose some revenue for rural projects, greatly expanded urban highway systems would result. To the contractor, it would mean a shift from rural to urban work; to the highway user, it would mean the eventual end of the annoyance of traveling in cities, and the elimination of the need for signs saying "End of State Maintenance."

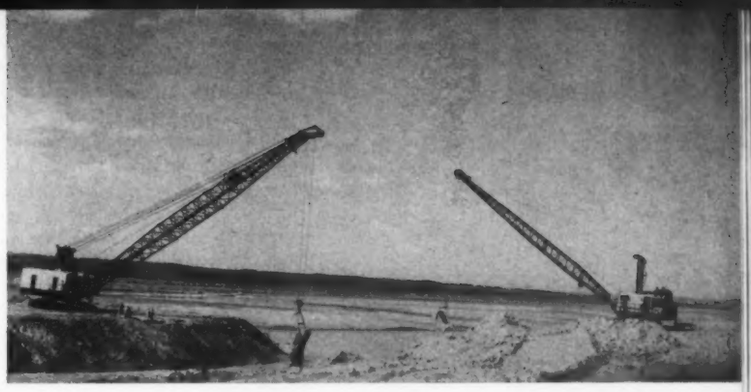
NEWS AND VIEWS

Spending is expected to hit new peaks for most types of construction next year, increases ranging generally from 5 to 10 per cent over this year. Commercial building, according to U. S. Commerce and Labor departments, should go as high as 17 per cent over this year, reaching almost $8¾ billion. Federal, state, and local construction on schools, roads, sewers and water facilities is expected to jump to $13 billion, a 10 per cent hike over 1955.

These days, when the nation's roads are under fire as being inadequate, it's good to hear about things like the 20th anniversary of 1½-miles of paving on State Highways 41 and 51 in South Carolina. The nation's first fully engineered soil-cement road, is still in excellent condition, despite traffic increases from a few hundred to 2,900 vehicles daily. Compression tests taken this year show the road to have a strength of 922 psi compared to a strength of 480 psi when it was completed in 1935.

Ever since the first woman went to work in the business and industrial world, jobs which were in the province of the male alone have been invaded by women. The latest conquest has been made by Mrs. Roland Weitzel, who's hardly in the amateur class when she operates shovels, draglines, and other equipment. She got her start as an operator in Fort Collins, Colo., where her husband worked long hours for Weitzel & Sons, in partnership with his father and brother. She started going to work with her husband, got interested in the equipment, and got her husband to teach her how to run it. Now Mrs. Weitzel works in earnest for the firm, and she's so good that one of her husband's chief competitors wanted to hire her when she wasn't working for her husband. She nixed the idea, naturally.

This sketch shows part of the $85 million marine terminal development the Port of New York Authority will build in the next 7 years along a 2-mile stretch of the Brooklyn waterfront. The first structure to be built will be the three-berth quay, 2,000 × 270 feet, right, capable of handling 144 trucks. A new 700 × 320 foot pier and a reconstructed 900 × 170-foot pier will complete the basin.



Two big draglines, a Marion 191-M with 150-foot boom and 8½-yard bucket and a Marion 111-M with 110-foot boom and 3½-yard bucket, work from opposite ends of the closure gap, casting chalk material into the 150-foot gap to divert the river.

U. S. Army Corps of Engineers Photo

Dirt movers rush dam closure as Missouri is held in check

The powerhouse superstructure, switch yard, and transformer yard at Gavins Point Dam on the Missouri remain to be completed, but the biggest work on the structure was finished with the closure of the 600-foot section between the South Dakota bank and the completed section of the dam on the Nebraska side. Though this required only nine days, preparatory work, including the stockpiling of 90,000 cubic yards of material for the dike, was started months in advance.

All surplus chalk from spillway and powerhouse excavations was stockpiled during the early stages of the $18,017,335 contract held by the joint venture of Western-Massman-Jones Cos. Stockpiling was done by a fleet of Euclid twin-engine 50-ton end-dumps loaded by big shovels and draglines. Another stockpile of 13,000 cubic yards of material was also built on the South Dakota bank by Euclids, which were ferried across the channel one at a time.

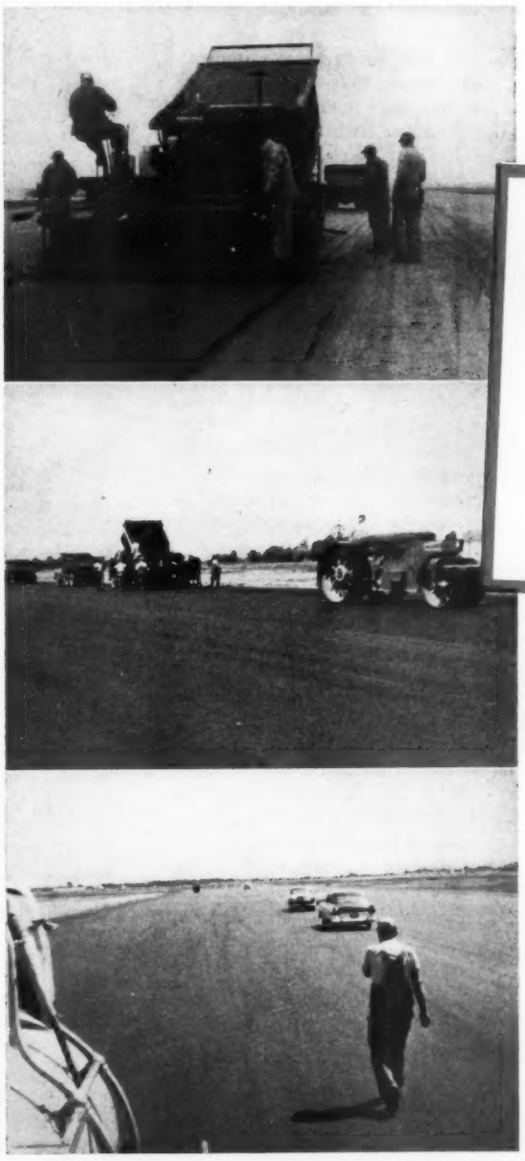
As the closure period approached, the river flow was reduced upstream at Fort Randall Dam. A few days before closure, the dredge Western Warrior began placing a sand blanket in the gap downstream from the dike.

Euclids began building the dike at the upstream edge of the gap by end-dumping from the end of the dam. Three big draglines, the Marion 111-M, a Marion 191-M normally handling a 14-cubic-yard bucket on a 120-foot boom or an 8½-yard Hendrix bucket on a 150-foot boom, and a Bucyrus-Erie 54-B, loaded the Euclids; dumped material was shaped by a Cat D8 tractor-dozer.

This part of the dike was built 7 feet above normal water level, and was 60 feet wide at the top. When the dike reached 450 feet into the 600-foot gap, so that only a 150-foot opening remained, a huge cross dike was built extending 100 feet upstream, and 150 feet downstream from the main dike, to form a rough T-section. This first phase of closure required about four days.

During this period the flow of the river was cut to 4,000 cfs, compared with a normal 27,000 cfs. Then the Marion 191-M with 8½-yard bucket on a 150-foot boom began working from the end section of the dike already completed, and a Marion 111-M with 4-yard bucket began working on the other side of the 150-foot gap, both casting chalk from stockpiles into the opening. The 191-M took material from the T-section, while the 111-M worked from the stockpile previously ferried across the channel.

When the last trickle of water stopped flowing through the channel and the waters of the Missouri were diverted through the powerhouse, the job of strengthening and raising the dike began so that the water level in the reservoir could be raised rapidly. Even while the 150-foot gap was being closed, the fleet of Euclids, a dragline, and a dozer were working to raise the dike section an additional 18 feet so that the reservoir level would be high enough to allow water to flow through the spillway in sufficient volume to supply downstream interests with water. This work continued until, about 9 days after the start of closure, diversion was completed. THE END



Constructing hot-mix, heavy-duty Texaco Asphaltic Concrete pavement on runway of Hulman Municipal Airport, Terre Haute, Ind., new home of the jet-driven planes of Indiana's Air National Guard.

CONTRACTORS
Shumaker Bros. Industries, Inc., Indianapolis
Grady Asphalt, Inc., Indianapolis

What type pavement for Airports?

Hulman Municipal Airport at Terre Haute, Ind., new home of that State's Air National Guard, recently completed some major improvements. The old 5,300-foot east-west runway was extended to 7,900 feet and a new 7,000 foot taxiway was added.

The same resilient, all-flexible type of construction was used for both runway and taxiway. A hot-mix Texaco Asphaltic Concrete surface, three inches thick, was laid over a 9-inch water-bound macadam base and a 9-inch stabilized gravel sub-base.

The ability of this type of airport construction to absorb impact and to maintain complete, lasting contact with the supporting sub-soil explains its exceptional durability and low upkeep cost. Its first cost, too, represents a worthwhile saving over other pavements having the same load-carrying capacity. Freedom from joints and immunity to ice control chemicals are other desirable features of Terre Haute's Texaco-paved runway and taxiway.

Highway and airport builders will find helpful information on all types of asphalt construction in two free Texaco booklets which can be obtained without obligation by writing our nearest office.

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TEXACO ASPHALT

For more facts, use Reader-Reply Card opposite page 18 and circle No. 202

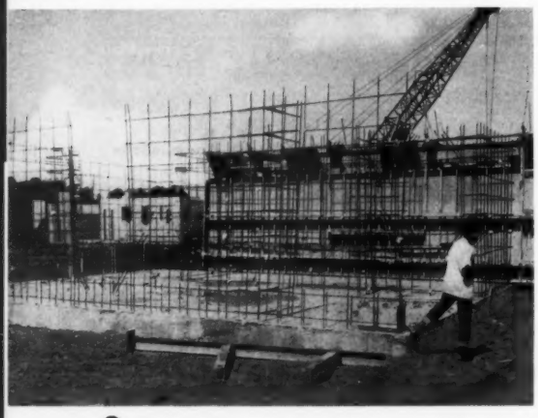
Six special forms help complete six concrete homes daily

Monolithic pours of exterior and interior bearing walls are made with 35-ton forms for $11 million housing job

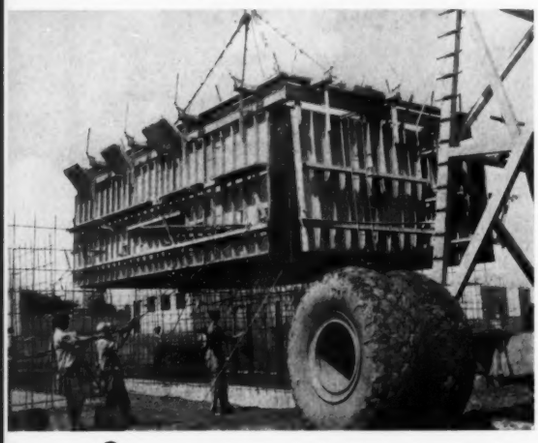
by ANTHONY N. MAVROUDIS,
field editor

(Additional photo on front cover)

1. A Gradall begins excavation for the 2½-foot-deep footing trench along the periphery of a house site. The footings are poured monolithically with the floor slab. *C&E Staff Photos*



2. Reinforcing steel for the exterior and interior bearing walls is fastened to the foundation by means of dowels rods embedded in the concrete.



3. An electrically operated LeTourneau "bomber crane" lowers a specially designed Blaw-Knox form, weighing 35 tons, onto a foundation.

4. Only edge forms are used for a 4-inch-thick reinforced-concrete roof being precast on top of a day-old slab. A total of 15 slabs are cast on a bed.

A completely mechanized operation is being used with varied construction techniques to build six detached single-family homes every day in the Villa Las Lomas housing project, a development that will provide metropolitan San Juan, the capital of Puerto Rico, with 1,583 homes by the fall of 1956.

This is an $11 million housing job, being jointly developed by the IBEC Housing Corp. and the Corbetta Construction Co., Inc., both of New York, N. Y., and Rexach & Rivera Construction Co., Inc., San Juan, Puerto Rico. The three organizations formed two Puerto Rican corporations, one a sponsor and developer, the other a construction corporation, to carry out the job.

After eight months of work on the project, the contractor hit the present production rate of six houses per 8-hour day. This has been achieved largely by the six sets of specially designed steel forms, built and furnished by the Blaw-Knox Co., Pittsburgh, Pa., and weighing approximately 35 tons each, which permit a monolithic pour to be made for all exterior and interior bearing walls of the houses. Over-all dimensions of the two sizes of homes being built are 29 feet 11 inches × 23 feet 10 inches and 33 feet × 20 feet 9 inches. Six facade variations are being used to avoid the sameness that plagued such developments in the past.

The six forms used for daily pours on this job are completely mechanical

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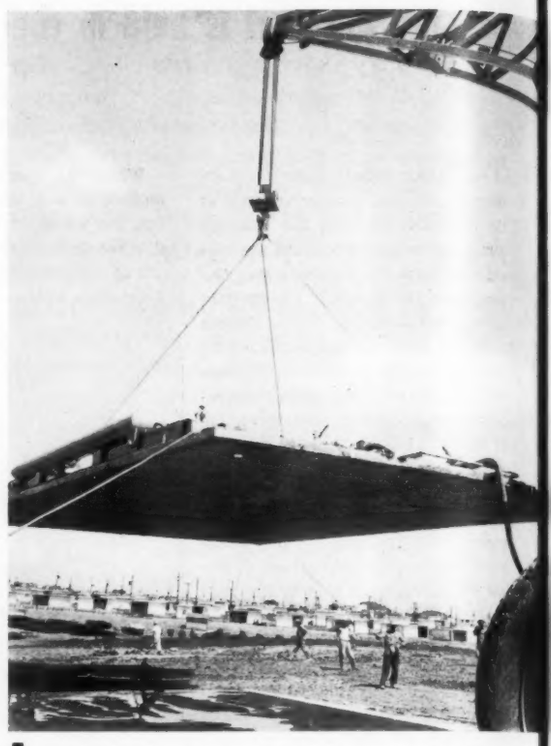

5. One of the 22-ton roof slabs is lifted from the casting bed by a LeTourneau "bomber crane" equipped with a vacuum mat furnished by Vacuum Concrete, Philadelphia, Pa.

6. The "bomber crane" with the vacuum mat easily swings a roof slab to a house. Though requirements call for a vacuum of only 10 inches, a 25-inch vacuum is being used.

7. One of two sizes of homes being built, this unit has an area of 750 square feet. Openings at roof level in the rear walls, together with louvered windows extending from the roof line to within a few feet of the ground, assure maximum air circulation.

in operation. The work of setting and stripping the forms, placing the forms on the foundation, and later removing them, is being done with simple levers, jacks, and cranes. Concrete pouring has been simplified through the use of a working platform, located on top of the forms, which has built-in chutes leading directly into the forms. This has two advantages: concrete is not wasted, and all operating mechanical parts are kept clean so that labor requirements for each pour are reduced.

Consolidation of the 5-inch-thick walls is being done by pneumatic vibrators attached to the outside of the forms. Air for the vibrators is supplied by a skid-mounted air-compressor that is pulled from house to house by tractors.

Foundation

After a Gradall excavates the 2½-foot-deep trench for the preparation of the 6-inch thick footing, pneumatic tampers supplied with air by a Le Roi compressor compact the subgrade to a 95 per cent density. Then, when the subgrade has been compacted and ⅜-inch reinforcing bars are placed on 12-inch centers, the 4-inch-thick concrete floor slab is poured monolithically with the footings.

Concrete, having a 2,000 pound strength, is delivered to the floor-slab footing by ready-mix trucks from one of two batch plants located at either end of the project. Forms for this work are fabricated in place and the finishing is done by hand. After 24 hours, the reinforcing steel for the exterior and interior bearing walls, together with the electrical conduits, are fastened to the foundation by means of dowel rods embedded in the footing slab.

The heavy Blaw-Knox forms, fitting around the wall reinforcing, are next lifted onto the foundations by an electrically operated LeTourneau "bomber crane" having a lifting capacity of 50 tons. A Buda 1184 diesel drives the generator producing power for the electric controls. This type of rig, no longer in production, was developed during World War II to facilitate the clearing of airfield runways.

Another time saver lies in the treatment of form surfaces. To prevent sticking, they are given an application of oil that contains a curing compound reducing the setting time. Concrete is delivered to the forms in ready-mix trucks that empty into a 1½-cubic-yard concrete bucket handled by a Marion crane.

After 24 hours, the forms are easily loosened from the concrete wall slabs by means of levers and lifted off the foundation by the "bomber crane." Concrete for the interior non-bearing walls, also poured in Blaw-Knox steel forms, is handled by a Koehring crane with a ¾-cubic-yard bucket.

Roof slabs precast

To match the fast construction of the house shells, roof slabs are being precast, then lifted into place by a vacuum mat. These 4-inch-thick reinforced-concrete roof slabs, weighing about 22 tons, have larger overall dimensions than the houses to provide an overhanging roof that shades a home and protects openings in the rear wall from rain.

Only 6-inch edge forms are being used for the slabs, which are poured in stacks of 15 so that only one truck chute needs to be used to transfer concrete from the ready-mix trucks to the forms. Only one slab is poured per day on each of the 15 casting beds scattered throughout the project.

The completed 22-ton slabs are being lifted from the casting bed and transported to houses by a second "bomber crane" equipped with an 8-ton vacuum mat furnished by Vacuum Concrete, Philadelphia, Pa. This operation, which would tax a nominal-capacity crane, is being done easily with the vacuum mat. A vacuum of 25 inches is being used, even though 10 inches is sufficient, to eliminate chances of a slab being dropped. When the roof has been set, metal brackets previously embedded in the walls and the roof slab are welded together to form a permanent connection between the two.

A special feature of the houses is the design of ventilating openings at the roof line in the rear walls. Ventilation, an important consideration in semitropical Puerto Rico, is also responsible for the jalousie-type windows with aluminum louvers that extend from the roof line to within a few feet of the floor. This roof-level and window ventilation will assure occupants of a maximum circulation of air.

The final operation on this project is pouring about 14½ miles of concrete streets and sidewalks. This is being done last since the huge "bomber cranes" handling house forms and roof slabs might possibly damage the pavement. The 20-foot-wide streets are being paved with 2,500-pound concrete delivered by ready-mix trucks.

Batch plants

Two Blaw-Knox batch plants, one located at either end of the 205-acre Las Lomas tract, are supplying about 500 cubic yards of concrete daily for the project. One plant has a Blaw-Knox 400-barrel cement silo, the other, a 250-barrel silo. Cement is delivered to the plants by trucks, which empty over screw conveyors

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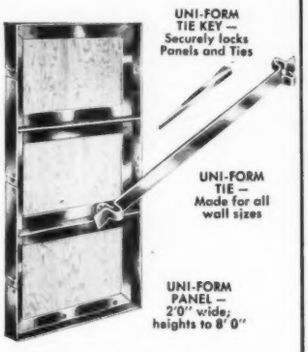
UNI-FORM
Concrete Forms

3 SIMPLE ELEMENTS FORM ANY CONCRETE STRUCTURE



UNI-FORM Concrete Forms are prefabricated steel-framed, plywood faced panels . . . ready to use when they reach the job.
UNI-FORM Ties and Keys lock and spread Panels into an automatically accurate form. No measuring — no guesswork. Completely versatile . . . they form straight, battered, circular, irregular or curved walls at lowest all around cost.

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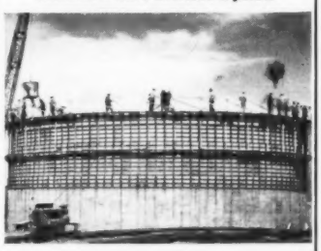

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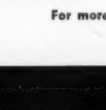
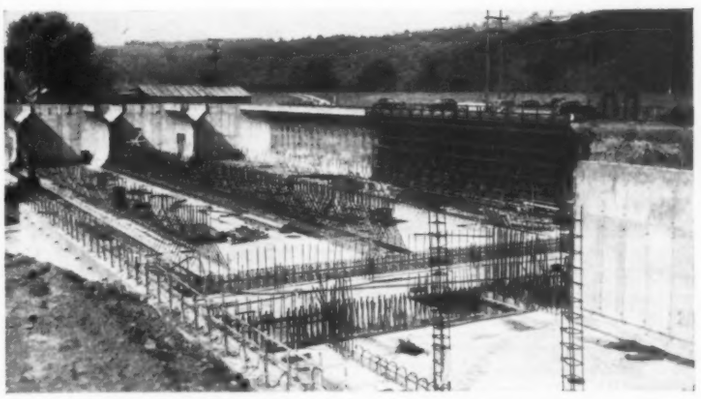
1238 N Kostner Ave
Chicago 51, Illinois



Unique Prefab Form System Speeds Sewage Plant "Y" Wall Construction



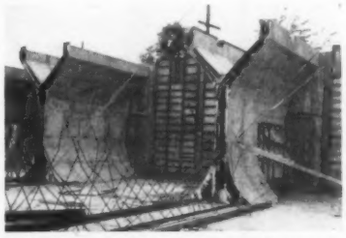
MECHANIZED FORMING with new "Y" wall trusses and UNI-FORM Panels speeds construction, saves labor and material

Field reports on a new system for forming "Y" walls in aeration tanks and settling basins indicate very satisfactory operation and important labor and material saving advantages for the system.

Developed by the Universal Form Clamp Co., Chicago, the new system is said to completely eliminate the many problems and difficulties encountered by contractors in forming this special type of wall in sewage disposal plant construction.

Specially designed trusses, which can be made to handle any type, height, shape or wall thickness, are used in conjunction with standard UNI-FORM Concrete Forms to form the "Y" wall. Assembly of the truss and UNI-FORM Panels into a complete form, ready to receive concrete is a fast, mechanical operation. Positive internal spreading and accurate wall thicknesses are assured by the use of Universal Spiroloc Cone Nut Assemblies.

Features incorporated in the design and operation of the Universal "Y" wall forming system eliminate the necessity of additional lumber or tying devices for the alignment and bracing of the unit.

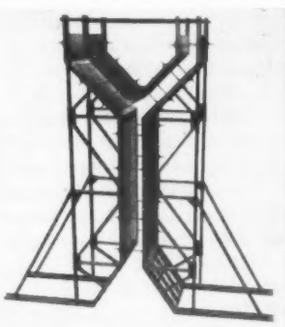


STRIPPED WALLS are clean and accurate

Erection, stripping and movement of the form can be handled either as individual pieces or as a large unit. Both methods have been very successfully used on recent projects.

Because standard UNI-FORM panels are used to form a large percentage of the "Y" wall contact area, it is possible to strip all UNI-FORM panels within a very short time after the actual pouring of concrete, leaving the trusses in place to provide the necessary support for the required period of time.

In this way, faster forming cycles, using minimum UNI-FORM equipment are possible, resulting in lower labor and material costs. UNI-FORM Panels are rented or sold, or rented with an option to purchase.



ASSEMBLED SECTION of "Y" wall truss with UNI-FORM Panels

For complete details on Universal "Y" wall forms and UNI-FORM Panels, Write

UNIVERSAL FORM CLAMP CO.
1238 North Kostner Avenue
Chicago 51, Illinois

Distributors and Branches in Principal Cities

For more facts, use Reader-Reply Card opposite page 18 and circle No. 203

A Koehring crane with an Erie Strayer bucket charges the bin of the Blaw-Knox batch plant with ¾-inch stone. Concrete is delivered to the project in ready-mix trucks.
C&E Staff Photo

(Continued from preceding page)

feeding Blaw-Knox elevators. Only two sizes of aggregate, ¾-inch stone and sand, are stockpiled at each plant. A crane with a clamshell is used to charge the aggregate bin. Ready-mix trucks transport concrete from both plants to various parts of the job.

Houses in the Las Lomas project cost from $6,000 to $6,200, depending on the size of their sites, and contain three bedrooms, a living-dining room, kitchen, tile bath, and a porch so designed that it is part of the living-room area. The entire floor area of each house is covered with asphaltic tile manufactured in Puerto Rico. Houses do not have overhead electrical fixtures, since the roof slabs are precast, but conduits embedded in the walls supply homes with electricity. The site is well drained and will be served by sewer lines being built by the Sewer and Aqueduct Authority of Puerto Rico. A 30-inch water main, part of the San Juan supply system, will provide Las Lomas with water.

Personnel

IBEC Housing Corp., Corbetta Construction Co., Inc., and Rexach & Rivera Construction Co., Inc., are building the development through two Puerto Rican corporations. The Commonwealth Development Corp. is the sponsor-developer, and the Las Lomas Development Corp. is the construction organization. The IBEC Housing Corp. is an affiliate of the International Basic Economy Corp., a financing development company founded in 1947 by the Rockefeller family to promote economic development in various parts of the world.

Juan R. Brugueras is project manager and Antulio Pietri, project superintendent, for the Las Lomas Development Corp. Antonio Torres was project engineer for the commonwealth Development Corp. Wallace K. Harrison, architect and a director of IBEC, was responsible for setting up the mechanical methods being used to construct the homes. He was assisted in the design and construction of the B-K forms by Charles Prokop, executive vice president of Corbetta Construction Co. George A. Dudley, president of the IBEC Housing Corp., is board chairman of the Las Lomas Development Corp. Henry C. Rexach, president of Rexach & Rivera, is the president of Las Lomas, and Roger H. Corbetta, president of Corbetta Construction Co., is vice president.

THE END

INVEST IN

U. S. DEFENSE BONDS

NOW EVEN BETTER

New, lightweight saw has increased power

■ Increased power and less weight are features of a new chain saw announced by Homelite, a division of Textron American, Inc., Riverdale Ave., Port Chester, N. Y. Built to deliver 5 horsepower, the saw weighs only 20 pounds.

According to the manufacturer, the

At last! Tube and flap

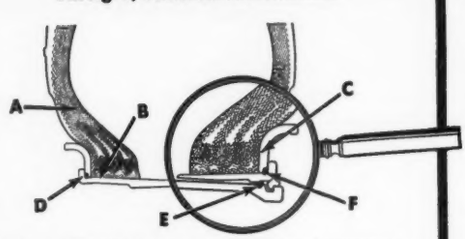
ANOTHER GREAT FIRST BY GOODYEAR
ends a major cause of down time on even the largest earth-moving vehicles!

TUBELESS TIRES

BUILT WITH 3-T NYLON CORD *plus* EASY-MOUNTING TRU-SEAL RIMS!

Made in all ... mover and ... types — inclu... new Wide-Base ... Conventional ... Sections!

How Goodyear Engineering assures quick, Airtight, Tubeless Assemblies:



(A) 3-T NYLON CORD plies allow no air-seepage through tire.

(B) New-angle bead-base hugs Tru-Seal rim.

(C) Tru-Seal rim employs same general mounting principles as conventional rims.

(D,E,F) Tru-Seal rubber rings press into locking grooves, hermetically seal entire assembly—*automatically!*

Ever since it was first rumored that Goody... engineering had scored again—that tubeless ti... in even the BIGGEST SIZES were on the way—... earth-moving industry has buzzed with questio...

How can such huge tubeless tires be safely mount...
How can they be made to hold air?
Will they actually end all need for tubes and fl...
Will savings make change-over worth while?

THE ANSWERS ARE HERE—AND PROVED! ... proved in actual commercial operations—in ... mines, coal mines, copper mines, big road, ... and construction jobs—*and not a single cas... major trouble of any kind has been reported!*

In fact, reports have been the most uncondit... ally enthusiastic in years! They're *attested* rep... that add up to cost-cutting advantages like th...

◀ The new Homelite Model 5-20 chain saw does a man-size job of felling trees up to 20 inches in diameter.

high-compression short-stroke engine design of the new Model 5-20 cuts wasteful friction, increases engine life, and reduces gas consumption. Because of its all-angle diaphragm carburetor and light weight, the saw handles easily while cutting up, down, or upside-down. All types of cuts—felling, bucking, boring, notching, trimming, or undercutting—are possible with the unit.

Many sizes and types of guide bars and attachments are available. With a clearing attachment, the Model 5-20 becomes a fast-cutting tool for clearing highway, pipeline and power-line right-of-ways. A new brushcutter attachment quickly converts the saw into a safe, easy-to-operate power scythe for cleaning out brambles, brush, undergrowth, and small saplings. Available straight blades range in sizes from 14 to 60 inches, and plunge cut bow-saw attachments are available in 14 and 18-inch sizes.

For further information write to the company, or use the Request Card at page 18. Circle No. 9.

Folder on shores, clamps

■ Both standard and extension-type shores and two types of column clamps are described in an illustrated folder from Baker-Roos, Inc., 602 W. McCarty St., Indianapolis 6, Ind.

Photographs and drawings illustrate the features and application of Rooshor extension-type shores, available in sizes adjustable from 6 feet to 10 feet 6 inches or from 8 feet to 14 feet, and Rooshor standard shores. Single-bar and hinged-bar-type column clamps are described and their specifications given.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 73.

Automatic leveling with new instrument

■ Automatic leveling by means of a suspended objective lens is the feature of a new surveying instrument made in Italy and offered in this country by Filotecnica Salmoiraghi, Inc., 41–14 24th St., Long Island City 1, N. Y.

This new Italian-made instrument features automatic leveling with a suspended objective lens.

This new automatic level, Model 5172, consists of a conventional three-screw leveling base to which is attached a periscopic telescope. The telescope can be rotated on the base about a vertical axis to permit sighting in any direction. The vertical part of the telescope tube contains a pendulous device, with a suitable arrangement for damping oscillation, which has the effect of automatically producing a horizontal line of sight. The operational range of this device is contained within the centering range of the spherical bubble.

The instrument's horizontal circle is graduated into divisions of 10 minutes each. By estimation, a surveyor can read angles to one minute. Ratio of the stadia lines is 1:100.

Weighing slightly more than 6½ pounds, the instrument is available with a handy metal carrying case. An adjustable leg tripod completes the assembly.

For further information write to the company, or use the Request Card at page 18. Circle No. 56.

Open-web steel joists

■ A design manual treating the characteristics and application of open-web steel-joist construction is available from the Steel Joist Institute. This 41-page booklet discusses the advantages of open-web steel joists, the properties and dimensions of various manufacturers' joists, standard specifications, etc.

To obtain Manual No. ST-52 write to the Steel Joist Institute, Du Pont Circle Bldg., 1346 Connecticut Ave. N. W., Washington 6, D. C., or use the Request Card at page 18. Circle No. 68.

Thor forms new division

A construction equipment division has been formed by the Thor Power Tool Co., Aurora, Ill., for the development, production, and sales of a line of construction machinery to supplement the company's present line of power tools.

William J. Miller and Elmer R. Stitt, formerly of Master Vibrator Co., will head the division.

...oubles are gone forever!

EVEN THE *PRICE*
WONDERFUL NEWS!
...ear's new tubeless earth-
...ires cost you no more than
...ional tires with tubes.

...re **expensive down time** because of tube and ...uble!

...re **expensive tube replacement**—a big factor on ...obs where tires outlast 2 to 3 tubes!

...**easier mounting and dismounting**—no more ...inflation, no more tubes and flaps to handle—...complicated mounting methods to learn!

...irtight assembly—Goodyear's exclusive ...LON CORD forms leakproof air chamber—and ...l rims *hermetically seal* the assembly!

...**running** than conventional assemblies—means greater safety, longer tire life on long, heavy duty!

Slow leaks instead of blowouts—small, unnoticed injuries lead to blowouts in conventional tires. In Goodyear tubeless earth-movers, they may be detected and repaired *before* costly, dangerous damage!

Simpler, re-usable valve-parts—Goodyear's tubeless valve program means fewer parts to stock, less costly parts that can be used over and over again!

Goodyear tubeless earth-mover and grader tires will soon be available on new equipment from leading manufacturers.

Goodyear, Truck Tire Dept., Akron 16, Ohio

...d Specify

GOODYEAR

Tru-Seal—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

Look for this sign; there's a Goodyear dealer near you.

GOODYEAR TIRES

MORE TONS ARE HAULED ON GOODYEAR TIRES THAN ON ANY OTHER KIND!

For more facts, use Reader-Reply Card opposite page 18 and circle No. 204

Two new units added to diesel crawler line: 57-hp tractor and 1 1/3-yard tractor shovel

■ Two diesel-powered units, the 12,400-pound HD-6 crawler tractor and the 19,600-pound HD-6G tractor-shovel with a rated capacity of 1 1/3 cubic yards, have been announced by Allis-Chalmers Mfg. Co.

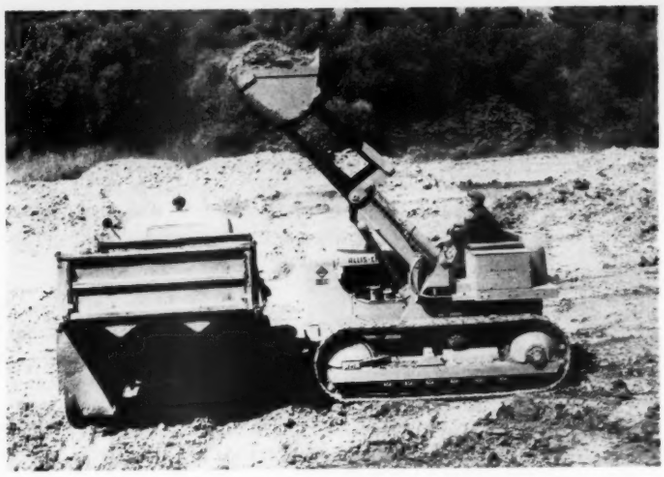
Features incorporated in both units include the new A-C diesel engine with follow-through combustion; a "wrap-around" radiator guard said to provide better tractor balance and to reduce tractor-dozer combination costs; tough all-steel box-type A main frame which provides for easy service accessibility; one-piece line-bored steering clutch and final-drive housing that provides longer gear life; and straddle-mounted double-reduction final-drive gears mounted on tapered roller bearings to reduce gear spreading and corner loading of gears.

The heart of the newly engineered power train is the A-C HD-344 diesel engine, a four-cylinder four-cycle unit that develops 57 net flywheel horsepower, 45 horsepower at drawbar, and 55 horsepower at the belt. In the HD-6 the maximum drawbar pull is approximately 12,650 pounds. It has five forward speeds ranging from 1.5 to 5.5 and reverse speeds of 2 and 4.1 mph.

A full line of extra equipment engineered to the HD-6 includes a hydraulic angle and a straight blade dozer, a ripper, power-control units, winches, and four-wheel scrapers. Accessories include tractor cab, canopy top, special track shoes, power takeoffs, and heavy-duty filters, truck wheels, idlers, and truck frame guard equipment.

Special interchangeable equipment for the HD-6G includes a rock, drag, and light materials bucket; an angle-dozer and two bulldozer blades; a crane hook; a trench hoe; and lift, tine, and rock forks. Accessories include replaceable bucket teeth and a rear outlet from the shovel hydraulic system to operate scrapers, rippers, and other equipment.

For further information write to Allis-Chalmers Mfg. Co., Tractor Group, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 3.



The new Allis-Chalmers HD-6G, equipped with a 1 1/3-cubic-yard shovel, is powered by a diesel engine developing 55 belt horsepower.

Hopper-conveyor unit for road-shoulder work

■ A hopper-conveyor unit designed for road-shoulder and maintenance work is described in a folder available from Power-Pack Conveyor Co., 13910 Aspinwall Ave., Cleveland 10, Ohio.

Quickly attached to any conventional truck, the unit deposits up to 3 tons of road-shoulder material in one direct operation from truck to shoulder, eliminating leveling machinery and additional labor. The strike-off box on the unit is adjustable from road level to 4 inches above grade.

To obtain this folder write to the company, or use the Request Card at page 18. Circle No. 186.

How Marfak cuts maintenance costs

Better and longer lasting protection — that's why contractors prefer *Texaco Marfak* and why *more than 555 million pounds of it have been sold!*

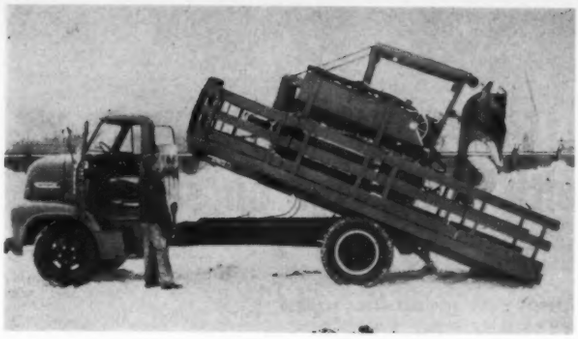
For chassis lubrication, *Texaco Marfak* is ideal because it won't pound or squeeze out. It stays on the job for extra protection against wear and rust. Parts last longer.

In wheel bearings, *Texaco Marfak Heavy Duty* seals out dirt and moisture — seals itself in. This means extra thousands of miles between scheduled lube jobs, extra long life for bearings, and greater braking safety. No seasonal change required.

For multi-purpose use, the new, lithium-base *Texaco Marfak Heavy Duty Special 2* pumps easily and lubricates effectively even at winter temperatures. It resists water washing and stands up in the

TUNE IN:
TEXACO STAR THEATER
starring JIMMY DURANTE
on TV Saturday nights.
METROPOLITAN OPERA radio
broadcasts
Saturday afternoons.

TEXACO



The Henderson heavy-duty truck hoist and winch have capacities of 8 tons and 8,000 pounds, respectively.

Standard and heavy-duty hoist and winch units

■ Henderson Mfg. Co., Inc., 1203 Rockford Road S. W., Cedar Rapids, Iowa, offers hydraulic under-body truck hoist and winch units, with double-action cylinders throughout to assure complete operator control over both hoist and winch at all times. The low 25-degree angle of incline is said to permit easier loading.

The Henderson heavy-duty hoist is rated at 8 tons, and the heavy-duty winch at 8,000 pounds. The standard hoist and winch are rated at 6 tons and 6,000 pounds, respectively. Hoists and winches are available in proper lengths for standard truck lengths.

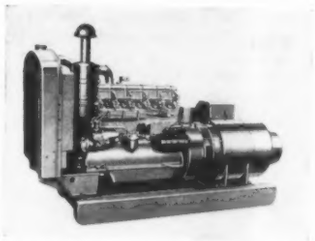
Greater maneuverability and reduction in equipment-handling time are said to result from use of these hoist and winch units.

For further information write to the company, or use the Request Card at page 18. Circle No. 111.

New 35-kw plants offered in diesel and gas models

■ Two new 35-kw electric plants, one diesel and the other gasoline-powered, are being marketed by the Kohler Co., Kohler, Wis.

The new diesel unit has a conservatively rated capacity of 35,000 watts ac. It is recommended especially as a power source of sole supply for construction projects, off-shore drilling rigs, barges and tugboats, and for similar heavy-duty operations. The new gasoline-powered plant also produces 35,000 watts ac, and is recommended as a source of stand-by power for plants and other permanent installations.



The Kohler 35-kw diesel electric plant.

The diesel-powered models are equipped with a modern-design Waukesha 195 DLC 6-cylinder liquid-cooled engine which develops 75 horsepower at the governed speed of 1,800 rpm. The new gasoline-powered models have a Waukesha 195 GK 6-cylinder liquid-cooled engine which develops 81½ horsepower at 1,800 rpm.

For further information write to the company, or use the Request Card at page 18. Circle No. 82.

Long-shank drills for deep-hole work

■ Longer shanks to permit deep-hole and through drilling in concrete construction and plant-maintenance work are a feature of the 24 new carbide-tipped masonry drills added to the line manufactured by the Carboloy Department, General Electric Co., P. O. Box 237, Roosevelt Park Annex., Detroit 32, Mich.

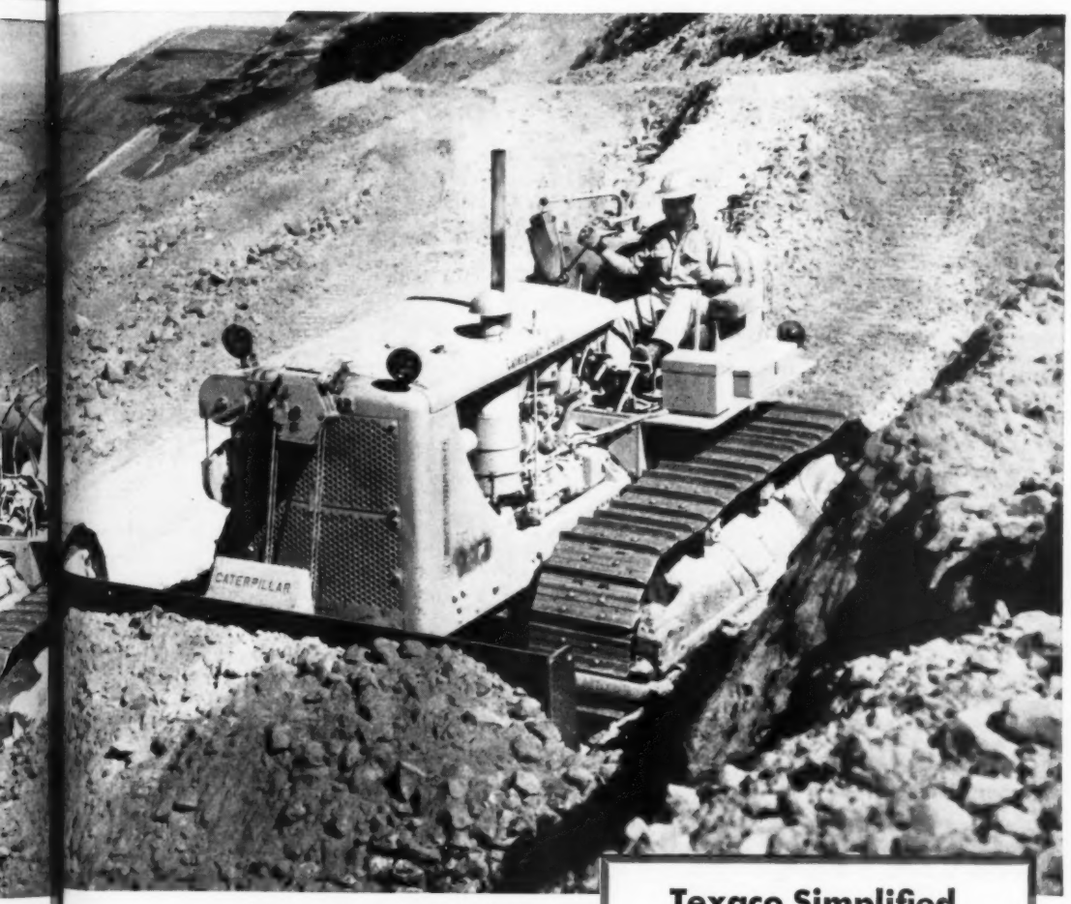
Besides including the new spiral "cleans-as-it-drills" construction developed by Carboloy, the new drills have butt-welded shanks of 21 and 18 inches with diameters of ¼ to 1½ inches. Each shank is "twist-tested" for heavy drilling conditions, according to the company.

For further information write to the company, or use the Request Card at page 18. Circle No. 77.

Economy Forms expands

An extensive expansion program is now under way at the Des Moines, Iowa, plant of Economy Forms Corp. More than 24,000 square feet of floor space will be added to the present plant, bringing the total floor area to 60,000 square feet.

The press shop and shop and office facilities will be expanded, and new material-handling equipment is being installed. Dock facilities and two new warehouses are also being built.



Relocating highway along Columbia River.

severest service. It's especially designed for those who want *just one lubricant* to handle all chassis, wheel bearing, water pump and other lubrication.

Two other Texaco cost-reducers: Texaco Universal Gear Lubricant EP to keep transmissions and differentials running smoothly. *Texaco Track Roll Lubricant* to protect and extend the life of crawler track mechanisms.

Let a Texaco Lubrication Engineer help you simplify and improve your maintenance lubrication. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Texaco Simplified Lubrication Plan–

Enables you to handle *all* major lubrication with *no more than six* Texaco Lubricants. Cuts lubricant inventory, saves time, money and mistakes. A Texaco Lubrication Engineer will gladly develop a Plan especially to meet your requirements.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

For more facts, use Reader-Reply Card opposite page 18 and circle No. 205

Economical loading of muddy, sandy clay into trucks is done by a Caterpillar HT-4 Traxcavator during the widening of the Suez Canal near Port-Said, Egypt. On this type of job, where frequent moves are required, the rig works advantageously.

Tractor-shovels compete well with other rigs on same work

Versatile machines can mean increased unit profits on many loading, lifting, hauling, and digging jobs

Combining the abilities to dig, transport, lift, and bulldoze material with the mobility, durability and low first-cost of crawler and wheel-type tractors, the tractor-shovel has filled a definite need in construction since it was introduced about 30 years ago. Testifying to the importance of this machine is the fact that its sales are growing larger year by year. And the reason for this sales-volume growth is that the machine performs more jobs, and performs them more economically, then any other type of equipment.

Hydraulic tractor-shovels incorporate, to some degree, the performance characteristics of such special tools as power shovels, cranes, bulldozers, and scrapers and motor graders. Obviously, many attachments other than buckets must be available to realize the maximum versatility of these machines. Some of the attachments which make tractor-shovels highly efficient in a variety of jobs include skeleton rock buckets, light material buckets, lift forks with or without hydraulic top clamp, rear-mounted hydraulic ripper, angling bulldozer, land-clearing rakes, rear-mounted towing winches, hydraulic or cable scraper control equipment, and side-dumping buckets.

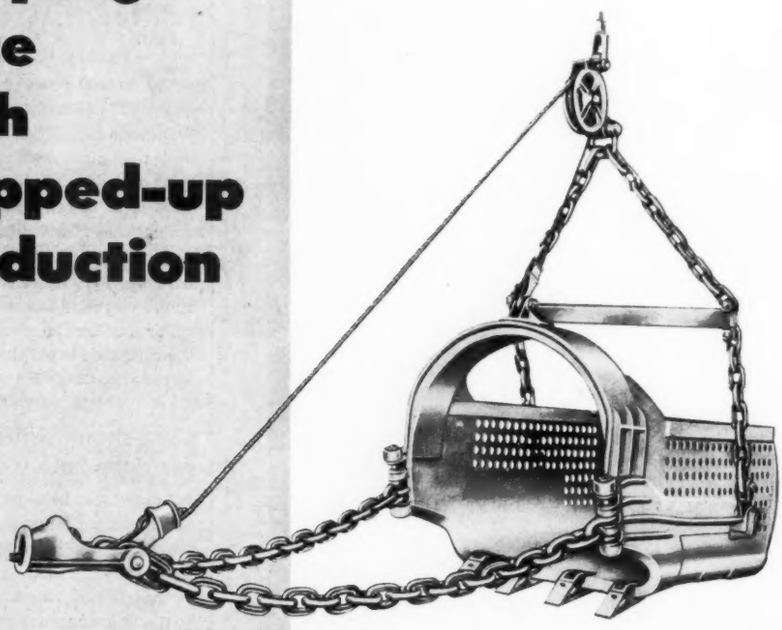
Does four types of work

In general, four classifications of work are handled by tractor-shovels. The first, loading, has a bucket-equipped machine transfer such material as sand, gravel, earth, shot and crushed rock, cinders, and slag into a hauling unit or hopper. With a log and lumber fork, the machine can turn in an efficient loading performance on saw logs, pulpwood, ties, poles, and stacked lumber. Palletized loads can also be handled with the forks.

A second job for fork or bucket-equipped machines is lifting and hauling. They can be used on building projects for carrying and placing bricks, wet concrete, concrete blocks, lumber, and other materials, from depots to their points of use. Sanitary landfill operators take advantage of the machine's lifting and carrying capabilities for obtaining and spreading cover material.

The third use of the machine is in excavation. Excavating contractors, particularly those who specialize in basement digging, are finding the tractor-shovel an excellent tool. The bucket's ability to handle more material per pass than a bulldozer, plus its ability to lift and dump over stock-

keeping pace with stepped-up production



HENDRIX DRAGLINE BUCKETS

BUILT FOR TODAY'S AND TOMORROW'S JOBS

A TYPE FOR EVERY DIGGING PURPOSE

¼ to 40 Cubic Yards

Hendrix Lightweight Dragline Buckets

Peak performance calls for top efficiency of earth-moving equipment, and throughout the industry Hendrix Dragline Buckets are reducing maintenance costs and shut-downs because they last longer under continuous heavy-duty operation. They're built to "carry the load" today AND tomorrow! It's the "extra service" you get from Hendrix Buckets that makes the big difference in profitable operations!

All Hendrix Buckets available without perforations

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 206

by FRED L. BAUMANN,
shovel specialist
Caterpillar Tractor Co.,
Peoria, Ill.

Elements in Selecting Tractor-shovels

SIZE	Weight pounds		Power Hp		Carrying capacity in pounds		Approximate Prices		Approximate* Cost per hour
	Wheel	Track	Wheel	Track	Wheel	Track	Wheel	Track	
1 cubic yard	12,750	15,000	80	50	4,000	5,000	$10,000	$ 9,500	$2.60
1½ cubic yard	18,500	21,000	95	70	5,500	7,000	$13,000	$13,000	$3.30
2¼ cubic yard	24,000	30,000	130	100	7,500	10,000	$16,500	$18,000	$4.50

* Ownership and operation without operator

pile crowns, contributes to a more economical operation. Excess material can also be loaded into trucks by the same machine. And if ground conditions are adverse, the equipment can be used to deliver building materials until it is needed for backfilling.

Land-clearing operation is the fourth big use made of the tractor-shovel. Either bucket or rake equipped machines make excellent land-clearing and pioneering tools. Trees and stumps fall easily when the rig's high lift and tip-back bucket action are brought into use. When tractor-shovels and comparably-sized bulldozers are used on the same type of work, the tractor-shovel shows it can do the more economical job.

Used to clean up a job, place culvert, transport small items, rehandle aggregate or subbase material, backfill around structures, and handle dewatering equipment, a tractor-shovel will often prove economical enough to pay for itself on a single project. With the proper attachments, it can clear land and pioneer haul roads, build haul roads, dig and load gravel, and remove snow from roads. Certainly, specialized machinery can do some of these operations more economically than tractor-shovels, but no other machine can match the over-all economy and ability of the tractor-shovel to users who must have maximum versatility to make their operation profitable.

Track vs. wheel-type rigs

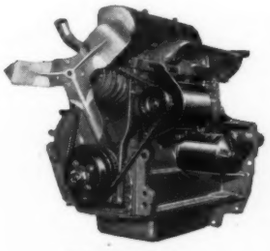
An examination of the costs involved may help in determining when more than one machine may be used to accomplish the same ends. In selecting track-type or wheel-type tractor-shovels, a comparison of approximate capacity, weight, power, and price shows that unit production costs should be and are comparable in cases where both types of machines operate with equal facility.

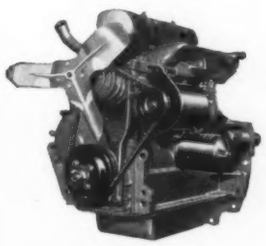
The choice of one or the other will depend on the work to be done, the type of underfoot conditions encountered and, to some extent, the locations that must be served. Usually, the wheel-type tractor-shovel will be used on dry firm surfaces. This might include projects where work points are scattered and the rig is able to move over city streets or paved plant areas, where materials to be handled are loose or easily loaded into the bucket, and where the work surface must not be scuffed.

The track-type tractor-shovel is used in areas where ground conditions or grades require good traction and flotation, where materials are firm and not easily excavated, where maximum lifting capacity and stability under load are required, and where tight quarters demand maximum maneuverability.

Various special track shoes are available for track-type machines to minimize ground scuffing, though there is some loss of traction when they are used. If constant movement is not required, track-type machines of 1½-cubic-yard-capacity and smaller can be readily transported by a small truck and relatively inexpensive tilt-top trailers. Machines of 1-cubic-yard capacity and smaller can be carried in dump-truck bodies.

In a comparison of tractor-shovels and crawler-mounted power shovels or clamshell cranes on loading operations, a number of factors other than machine performance enter the picture. For such work, tractor-shovels are favored when the work requires the machine to make frequent moves beyond the practical distance a power shovel can go under its own power. Also, tractor-shovels might be favored because it eliminates the need for one member of a crew, because it requires


FORD "134"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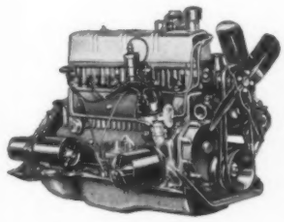
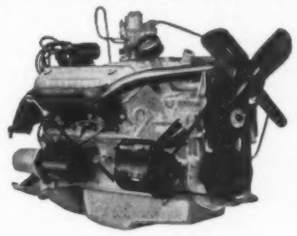
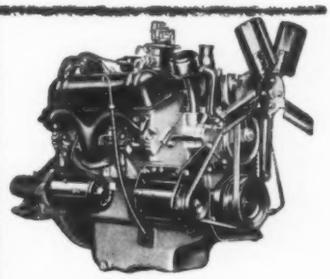

FORD "223"

NOW!

ONLY FORD OFFERS
4-6- and V-8 Overhead Valve
Short Stroke Industrial Engines


FORD "272"


FORD "332"

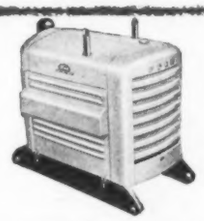
FOR '56—A FORD EXCLUSIVE!
Every Industrial Engine
Is of Short Stroke Design!
New Ultra-modern Overhead-
Valve Construction! Years
Ahead in Engineering!
Engines That Give Power-
Packed Performance . . .
Economical to Operate
. . . Last Longer

Ford
INDUSTRIAL ENGINES
AND POWER UNITS

• For '56—*every* Ford Industrial Engine and Power Unit is Short Stroke! These vastly superior engines are available to you in 4- 6- or V-8 cylinders and in displacements from 134 to 332 cubic inches. *Only* Ford offers *all* engines with Short Stroke design—engines that have *large* cylinder bores and short strokes for *low* piston speeds. And, because of such short piston travel, friction is cut, wear is reduced so that *engines last longer!*

Tests prove that, in their respective displacements, Ford engines deliver *more* power on *less* fuel. If you plan to *modernize* your equipment be sure to get the most modern power available—Ford *Short Stroke* Industrial Engines.

FORD Foot Mounted
Power Unit


FORD Skid Mounted
Power Unit

SPECIFICATIONS OF FORD INDUSTRIAL ENGINES AND POWER UNITS

SERIES	CYLINDERS	BORE & STROKE	DISPL. CU. IN.	COMP. RATIO	DYN. B.H.P.	DYN. MAX. TORQUE
134	4	3.44 x 3.60	134	6.6 to 1	48 @ 2800	110 lbs.-ft. @ 1400 rpm
172	4	3.90 x 3.60	172	6.75 to 1	61 @ 2800	148 lbs.-ft. @ 1400 rpm
223	6	3.62 x 3.60	223	7.8 to 1	107 @ 2800	202 lbs.-ft. @ 2000 rpm
272	8	3.62 x 3.30	272	7.6 to 1	131 @ 2800	249 lbs.-ft. @ 2400 rpm
332	8	3.80 x 3.66	332	7.5 to 1	160 @ 2800	308 lbs.-ft. @ 2300 rpm

INDUSTRIAL ENGINE DEPARTMENT
FORD Division of Ford Motor Company
P. O. Box 598, Dearborn, Michigan
For more facts, use Reader-Reply Card opposite page 18 and circle No. 207

a lower initial investment for the same cubic-yard-per-hour loading capacity, and because lift height requirements may be within the scope of a tractor-shovel or too restricted for a power shovel.

Crawler-mounted power shovels might be favored when the job demands the working of a higher bank or cut than can be handled by a tractor-shovel. Again, the power shovel would be the better choice if lift height requirements exceed the limits of a tractor-shovel, or where continuous operation in heavy and very abrasive rock is necessary. In the latter case, the continuous movement required of a tractor-shovel would greatly increase maintenance costs.

Contrary to a widely-held belief, tractor-shovel loading costs are actually lower than those of power shovels under conditions permitting the highest possible production rates. Investment per cubic yard of capacity, which have risen sharply since World War II, now make tractor-shovels require from $8,000 to $10,000 per cubic yard in the 2¼ to 1-cubic-yard sizes, while crawler-mounted power shovels range from $25,000 to $30,000 per cubic yard in the 1¼ to ⅜-cubic-yard sizes. The requirement for a two-man crew coupled with higher wages and the added expense of moving even a small crawler-mounted power shovel, have combined with the higher investment to drive excavating and loading costs of power shovels higher than those of tractor-shovels.

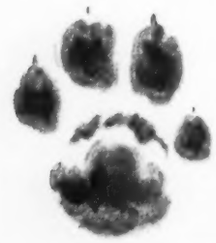
Substantial improvements in the design and manufacture of tractor-shovels have also helped to keep excavating and loading costs of tractor-shovels from rising. Among these are the better design and use of materials in engines, clutches, transmissions, brakes, and track components, which have resulted in lower weight-to-horsepower ratios.

Application of unit design principles has resulted in better balance and stability, permitting the use of larger buckets in relation to the size and weight of the machine. Also helping to keep costs under control is the use of higher pressures, which increased knowledge of hydraulic components has made possible. Pumps are more efficient and longer-lived. Full-flow filtering of hydraulic systems also greatly increase the life of all components, in spite of higher pressures and oil flow rates. All this means that today's tractor-shovels are operating with larger buckets and have greater lifting capacities. This increase in work capacity and the relatively low purchase and operating costs of the units result in lower unit work costs.

Today's tractor-shovel has the capacity to compete with a power shovel up to 2½ yards in size. And though the power shovel formerly reigned supreme in tough clay, hardpan, shale, glacial till, and similar material, the development of low-priced attachments and design improvements has enabled the tractor-shovel to work in these materials with little loss in efficiency.

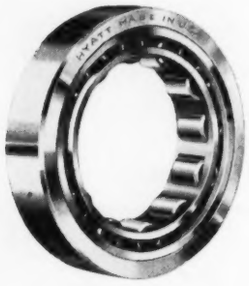
These include rear-mounted hydraulically controlled rippers which enable the tractor-shovels to excavate almost any tough material up to solid rock, and economical and replaceable tip bucket teeth that are usually enough to insure good production in heavy, hard clay soils. A final development making this possible was the adoption of the principle of tipping buckets back 30 to 40 degrees from the digging position at ground level by the use of hydraulic controls. This provides better utilization of bucket capacity, and the "fishtail" action of the bucket enables the operator to break up the material, making it easier to load the bucket.

THE END



HYATTS HELP MAKE GIANT D9 CAT LIGHT-FOOTED

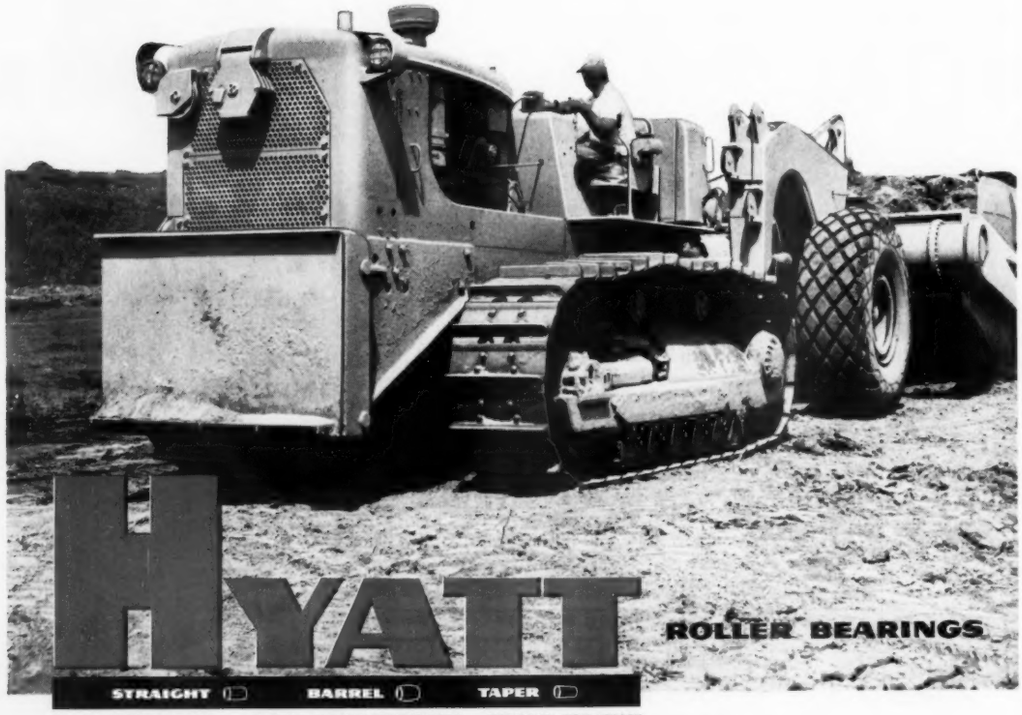
Caterpillar utilizes Hy-Loads in transmission and final drive of new D9, world's biggest crawler tractor



In announcing this 28-ton addition to its famous line, Caterpillar Tractor says it was designed to be a "*light-footed giant, with every part aimed at the kind of service which is too tough and too rugged for other tractors.*" No wonder we're proud that HYATTS were selected to shoulder so much of the shock-load in the D9's final drive and transmission!

When you realize that the new turbocharged engine in this tractor develops *230 drawbar horsepower*, you know what brutal punishment those bearings must bear. But Caterpillar knows, too, from long experience, that HYATTS can handle it and *keep coming back for more.*

Aren't these the kind of bearings you want on *your* equipment?



HYATT ROLLER BEARINGS

STRAIGHT BARREL TAPER

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

For more facts, use Reader-Reply Card opposite page 18 and circle No. 208

Portable melting pot for asphalt or pitch

■ Glas-Col Apparatus Co. has introduced a new thermostatically controlled electric melting pot for asphalts, tars, pitches, resins, mastics, and other viscous materials. The thermostatic control permits selection of the right temperature for the material being melted.

Lightweight (15 pounds) and measuring 12×14 inches, the unit will easily fit into the trunk of a passenger car. Its portability is said to make it ideal for maintenance jobs where only small volumes of material have to be melted.

The working capacity of the Glas-Col portable melting pot is 3 gallons. It operates from any 115-volt outlet. Fiberglas insulation 1¼ inches thick is used in the heating chamber, while the outside housing of the melter is of 20-gage aluminum.

For further information write to Glas-Col Apparatus Co., Inc., 711 Hulman St., Terre Haute, Ind., or use the Request Card at page 18. Circle No. 61.

The new Allis-Chalmers Forty-Five diesel motor grader has a rating of 120 maximum brake horsepower at 1,600 rpm.

New heavy-duty grader rated at 120 horsepower

■ The newest entry in the motor-grader field is the Allis-Chalmers Forty-Five, a heavy-duty unit powered by a new A-C diesel engine with 120 maximum brake horsepower at 1,600 rpm.

This new grader weighs 23,800 pounds, of which 17,375 pounds is on the tandem-drive rear wheels and 6,425 pounds on the front wheels. Blade pressure is 10,950 pounds.

The ADS-516 diesel engine used to power the Forty-Five is a six-cylinder four-cycle unit. It has a 4 7/16-inch bore and 5 9/16-inch stroke, with a 516-cubic-inch piston displacement. Power is delivered for forward speeds up to 20.6 mph and for reverse up to 7 mph. The grader can be throttled down, under governor control, to one-half these rated speeds without loss of rim pull, according to the manufacturer.

Special equipment available for use with the new grader includes 10 and 14-foot moldboards, a hydraulic shiftable moldboard, blade extensions, a bulldozer blade, and a scarifier with a maximum pressure of 9,200 pounds.

For further information write to Allis-Chalmers Mfg. Co., Tractor Group, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 70.

New drawing table folds to compact size

■ A drawing board that folds to a width of only 4½ inches in less than a minute is offered by the Broadway Mfg. Co. Because of its compactness, the table is especially recommended for use in small drafting rooms and in field offices.

The Handi drawing table is adjustable in 3¼-inch multiples to any desired height by means of a safety lock pin. The top may be adjusted by releasing easy-to-reach wing nuts.

For further information write to the Broadway Mfg. Co., P. O. Box 252, Waukesha, Wis., or use the Request Card at page 18. Circle No. 66.

New line of mufflers for diesel trucks

■ A new line of heavy-duty stack-type mufflers for diesel trucks has been announced by Harflo Products. The new mufflers are said to offer a minimum of back pressure combined with a tone control lower than those specified by the SAE.

A feature of the new line is that it simplifies the muffler-replacement problem. One of the four Harflo models will fit three out of five present-day diesel trucks without adapters of any sort. In the balance of installations, a simple extension or reducer solves the fitting problem.

For further information write to Harflo Products, 2609 Jenkintown Road, Ardsley, Pa., or use the Request Card that is bound in at page 18. Circle No. 76.

One of four new Harflo mufflers.

WORKABLE, PLASTIC concrete mixes made with Atlas Duraplastic Cement helped speed construction of both structural and paving portions of Ohio State Highway, Beechmont Levee Project at Cincinnati, O. Contr.: Vest & Bartell, Cincinnati.

Why will this concrete last longer?

Both paving and structures are built to last longer . . . when they're made with Atlas Duraplastic* air-entraining portland cement. For Atlas Duraplastic cement gives concrete greater durability . . . fortifies it against freezing-thawing weather and scaling caused by de-icing salts.

Atlas Duraplastic cement also gives concrete mixes greater workability that aids proper placement . . . gives them more cohesiveness to resist segregation. Paving jobs finish easily, and in structural concrete, surface appearance is improved.

YET DURAPLASTIC COSTS NO MORE than regular cement — requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write:

UNIVERSAL ATLAS CEMENT COMPANY

UNITED STATES STEEL (USS) CORPORATION SUBSIDIARY

100 PARK AVENUE, NEW YORK 17, N. Y.

Albany · Birmingham · Boston · Chicago · Dayton · Kansas City Minneapolis · New York · Philadelphia · Pittsburgh · St. Louis · Waco

*"DURAPLASTIC" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

AIR-ENTRAINING PORTLAND

CEM-D-179

Atlas® Duraplastic Cement

MAKES BETTER CONCRETE AT NO EXTRA COST

United States Steel Hour—Televised on alternate Wednesdays—See your local newspaper for time and station.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 209

An Allis-Chalmers HD-15 tractor-dozer helps load the 3-yard Tracto-Shovel bucket on another HD-15 excavating for service roads underneath the bridge. The attachment worked to good advantage in approximately 14 feet of headroom under the bridge. *C&E Staff Photo*

Built-up site creates problems in erecting plate-girder bridge

Overpass is built over expressway, service roads, subway, to open 120-mile artery running east from New York City

A 480-foot-long continuous plate-girder grade separation structure, one of the longest yet erected, is adding a fourth level of construction to a site in the borough of Queens, New York City, where it will form an important link in a 120-mile six-lane expressway running from Queens to the east end of Long Island.

The all-riveted overpass is being built over a depressed six-lane stretch of Queens Boulevard and two service roads located on an upper level. Just below the boulevard runs the Independent Subway System, one of the factors leading to the construction of a bridge at this site. Economic studies were first made to determine the feasibility of a depressed highway under Queens Boulevard when real estate organizations felt that an overhead structure would be unsightly. But because of the prohibitive cost of such a road, it was decided to construct the overhead.

When completed in January, the $2,800,000 3-span structure will form a junction between two expressways now being built—the Queens-Midtown expressway and Horace Harding Boulevard. These, when linked with a third expressway also under construction, will form a 120-mile expressway running from the Queens side of the Queens-Midtown Tunnel to Riverhead, Long Island.

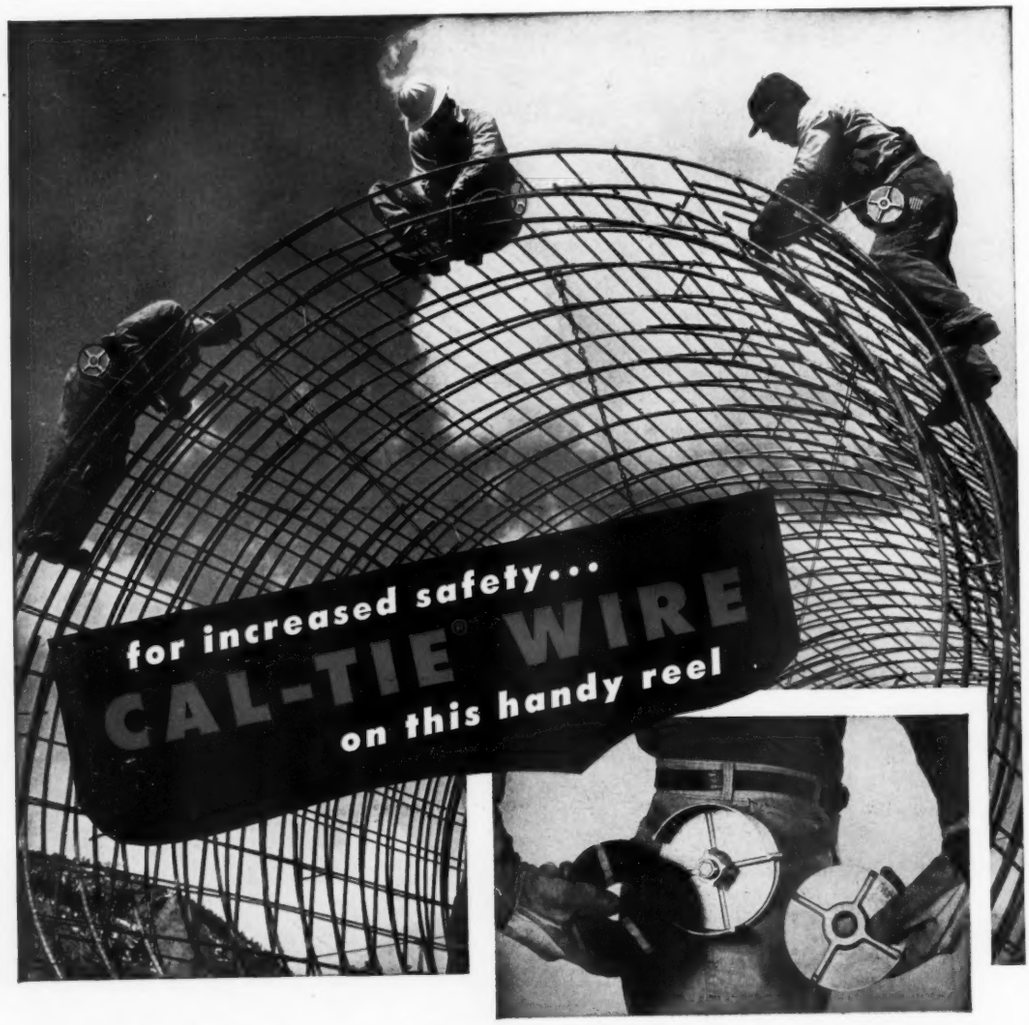
The Triborough Bridge and Tunnel Authority, New York City, awarded Tully & Di Napoli, Inc., Flushing, N. Y., the grade-separation contract, which included relocation of existing facilities, construction of interchanges and new service roads along Queens Boulevard, and maintenance of traffic during construction. The total embankment item in the contract was 200,000 yards.

Protect existing sewer

Grading and drainage operations for the two abutments straddling Queens Boulevard started the job off in September, 1954. The first big problem for the contractor was that of protecting an existing sewer before fill could be placed for the east abutment. The concrete box-type sanitary sewer, running diagonally across the area of the abutment fill, would not support surcharge, so a reinforced-concrete protective box, about 540 feet long to match the width of the fill, was built and placed directly on the sewer.

The box is 18 feet 2 inches wide—the same width as the sewer—and its height varies from 19 to 30 feet, depending on variations in the grade. The top of the protective box was designed to be 2 feet below the surface of the fill, so that the sewer will have to support only the weight of the hollow box and 2 feet of fill.

Reinforced-concrete wing walls, retaining the fills, will be faced with



This modern way to carry re-bar tie wire is far safer than old-fashioned methods of carrying shoulder coils. There is nothing to catch on protruding objects, thus throwing workers off balance. There are no loose ends to trip workers . . . no resulting scratches leading to infections from clumsy shoulder coils.

By using Cal-Tie Wire you also save money . . . in two ways:

First, Cal-Tie Wire is handy . . . workers can cut the exact amount of wire needed for a tie. You reduce amount of wire wasted in excessive cut ends. Second, since workers do not have to remove reels to do other work, you eliminate the waste incurred when coils are put down and forgotten.

Cal-Tie Wire on reels also increases worker efficiency. Being compact, fast tying even in close quarters is possible . . . kinking and tangling are eliminated . . . no time is lost in preparing wire for tying. All in all, Cal-Tie Wire in the handy dispenser saves money, materials and manpower.

Cal-Tie Wire, made under the careful quality control of CF&I throughout every stage of its production, is available in gauges 14 through 20. Coils fit any standard tie wire dispenser. Try Cal-Tie Wire and this modern dispensing method on your next contract.

CAL-TIE® WIRE
THE COLORADO FUEL AND IRON CORPORATION
CF&I

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 210

gray manganese speck brick and granite copings. Forms used for placing concrete were fabricated in place by Tully & Di Napoli with ¾-inch plywood with stud and waler design.

Piles driven for piers

Formerly a swampy area, this part of Queens County does not have a hard subsurface strata to support great loads. And since the grade separation is of a fixed continuous design and no appreciable settlement of piers and abutments is permitted, piles were needed for the foundation of the two piers.

A total of 216 Union Monotube Type F piles were driven for the west pier—the longer of the two—by a McKiernan-Terry 11-B-3 steam hammer handled by a Northwest crane. These and the 170 piles for the east pier were driven 35 to 60 feet deep. The piles could not be driven to refusal, so driving stopped when seven blows per inch of penetration was reached.

After the piles had been cut off at the desired elevation, they were filled with concrete by a Lima truck-crane with an Insley 1-yard laydown bucket. Reinforcing steel, consisting of ¾-inch rounds, was then embedded in the piles.

Pile caps and columns

The reinforced-concrete pile caps for the two piers are 120 feet long, 16 feet wide, and 5 feet deep. They were constructed in two 60-foot sections, then reinforced with 1¼-inch rounds placed on 12-inch centers.

The five elliptical column forms, prefabricated by the contractor and used four times to construct the ten columns of each pier, were placed on the prepared pile cap by a Lima truck-crane. As soon as the forms were positioned and guyed for vertical stability, and the 1¼-inch rounds held to an elliptical cross section by wires, the Lima poured a column in one lift with an Insley 2-yard laydown bucket. All concrete for the job, using air-entraining cement, is being supplied in Jaeger 5½-yard truck-mixers by Metropolitan Sand & Gravel Co., New York City.

The ten columns of each pier are on 10-foot 1½-inch centers and have elliptical cross sections. The major axes of the columns are 7 feet long, and parallel the center line of the roadway, which is skewed to the center line of Queens Boulevard. The mid-span distance from pier to pier is 193 feet.

Steel erection

Fabrication of the ten built-up plate girders across the three spans was subcontracted to Mount Vernon Bridge Co., Mount Vernon, Ohio, but actual steel erection was started in May by Eddy Steel Construction Inc., Jamaica, N. Y., with Mount Vernon fabricating the steel. Structural steel fabricated at Mount Vernon's Ohio plant was shipped by rail to Greenpoint in Brooklyn, N. Y., where it was loaded on trailer trucks for transportation to the job site.

For more facts, circle No. 211→

After two timber falsework bents were put up 45 feet outside each pier, a Lima 1201 crane placed the approach-span girders for both spans. The 70-ton-capacity crane with 60-foot boom and 20-foot jib handled all steel erection from the ground. The heaviest lifts made by the crane were the 39-ton girders for the west approach span.

Haunch sections, 90 feet long and about 12 feet deep over the piers, were then placed and connected to the approach span sections over the timber

(Continued on next page)

A Lima 1201 crane places the sixth mid-span closure section.

C&E Staff Photo

75 YEARS OF BUCYRUS-ERIE LEADERSHIP . . .

December 18 marks Bucyrus-Erie's 75th Anniversary. In the years since 1880, the company has been proud to bring many significant advancements to the design of excavators . . . the first electric excavator . . . the first crawler-mounted dragline . . . the first diesel shovel . . . and too many more "firsts" to detail here. Most important, however, the know-how back of these is yours in whatever Bucyrus-Erie machine you use.

President Theodore Roosevelt Visits Panama Canal: This Bucyrus-Erie shovel, one of 77 used on the Big Ditch, was included in his 1908 inspection tour.

The 1½-yd. 38-B has a world-wide reputation for outstanding performance. Bucyrus-Erie offers general purpose excavators ranging from ⅜ yds. up.

. . . GIVES YOU TOP PERFORMANCE TODAY . . .

You can expect top performance from a Bucyrus-Erie excavator because it's *built right in.* It starts with Individual Design — which means that each model in the line is designed from the ground up to handle the rated load. There is no over-powering or over-dippering to create "new" models. Parts are properly proportioned, operating functions are effectively balanced. This results in fast work cycles and big payloads, with maximum time on the job and long service life. The extras Bucyrus-Erie puts into the design and construction of excavators pay off many times over in added output and lower cost operation.

. . . PROMISES EVEN BETTER EXCAVATORS TOMORROW

You can expect even higher performance standards from Bucyrus-Erie excavators in years to come. The development of new and improved designs, and the search for better materials and more efficient manufacturing methods never ends. With facilities unsurpassed in the industry, Bucyrus-Erie promises you excavators that will serve you better than ever.

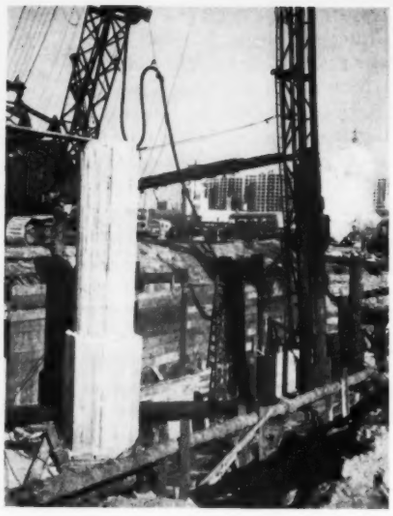
20Y55C

1880 BUCYRUS ERIE *1955*

South Milwaukee, Wis.

75 Years of Service to Men Who Shape the Earth

◄ Two 103-foot mid-span closure sections weighing about 39 tons each are transferred from a trailer delivery truck to blocking at the site.
C&E Staff Photos



A McKiernan-Terry 11-B-3 steam hammer handled by a crane drives Union Monotube F piles for the west pier of the grade separation structure. ►

(Continued from preceding page)

falsework. Rocker bearings were used on the abutments and the west pier; the only fixed bearing was located on the east pier.

Before the 103-foot mid-span closure section was placed between the cantilevered haunch sections, the approach span girders were tied to the fixed base of the abutment rockers by means of cables with turnbuckle adjustments. This pulled the girders back so that the closure section could be placed easily in case thermal expansion reduced the closure gap. As another precautionary measure, jacks were placed behind the abutment rockers. But as it turned out, these were not needed. The structure was designed so that the approach-span girders lifted automatically off the timber falsework bents as soon as the closure section was placed and riveted with guns supplied with air by a Schramm 315-cfm air compressor.

Interchanges

While steel was being erected, Tully & Di Napoli was working on the service roads that run between the piers. The 30-foot service roads carrying Queens Boulevard in each direction under the bridge replace the original service roads. No work has to be done on the depressed portion of Queens Boulevard.

Excavation under the bridge was carried out by an Allis-Chalmers HD-15 tractor-dozer and an Allis-Chalmers HD-15 with a Tracto-Shovel bucket. Both machines worked head on, the tractor-dozer helping to load the 3-yard bucket of the second tractor to capacity. Then the material was loaded into end-dump trucks and hauled away. A 3-inch-thick bituminous topping for the service road was put down in two 15-foot-wide courses by a Barber-Greene finisher.

Two 36-foot roadways, separated by a 12-foot-wide concrete mall, and two 3-foot 6-inch sidewalks will complete the overpass. The roadway section will consist of an 8-inch reinforced-concrete slab with a 4-inch carbon black concrete wearing surface. Approximately one mile of concrete pavement will be laid for approaches and interchange ramps. Modern aluminum lighting fixtures will be erected on the span, and the adjoining area will be completely landscaped.

Personnel

Fred Karcher is the superintendent for Tully & Di Napoli, and D. D. Bentley, Jr., is the resident engineer for the supervising engineer, Ammann & Whitney, New York, N. Y.

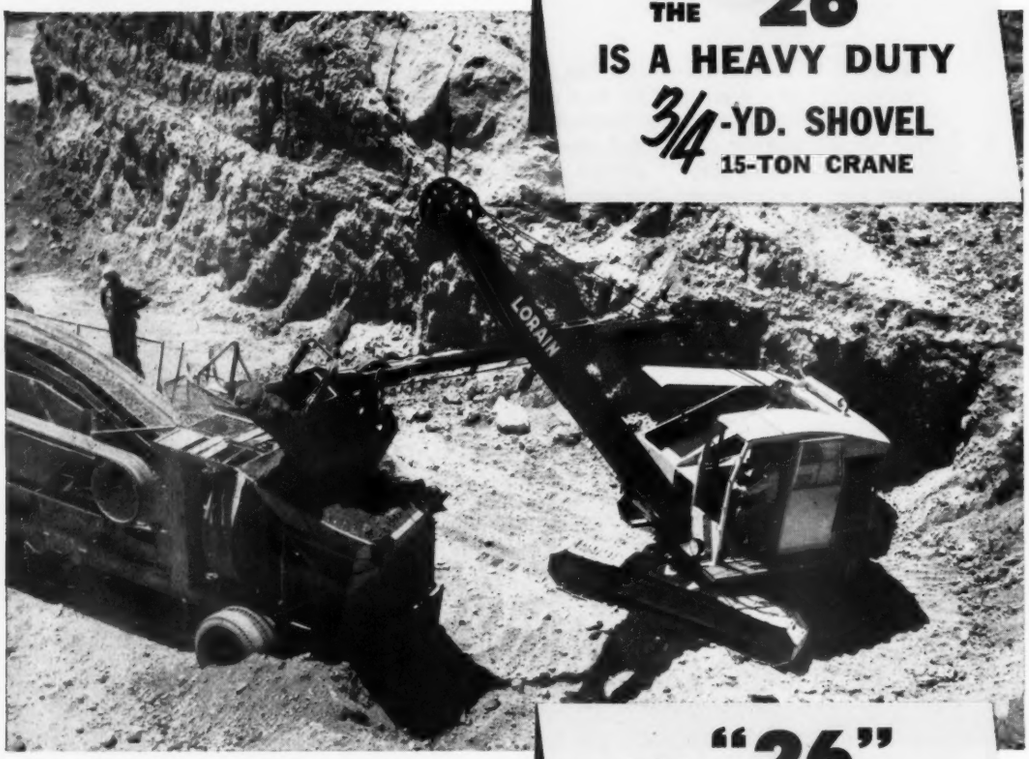
THE END

Coffing Hoist appoints service dept. manager

Andrew M. Kelly has been assigned to the post of manager of the new customer service department of Coffing Hoist Division of Duff-Norton Co., Danville, Ill. He will supervise orders, deliveries, and customer relations from the Danville plant. He will also study sales trends for the firm.

LORAIN SAYS . . .

THE "26" IS A HEAVY DUTY 3/4-YD. SHOVEL 15-TON CRANE



THIS LORAIN OWNER SAYS...

THE "26" "CONSTANTLY STANDS TERRIFIC DIGGING STRAIN"

The best test for any shovel is on the job. That's where product claims must be proved . . . and that's why Partner and Manager C. R. Davis of the Albany Gravel Co., Albany, Mo., says far more in these words than any claims Lorain may make . . . *"Our Lorain-26 is used for digging natural gravel from a solid deposit. It stands terrific digging strain constantly and takes hard digging abuse exceptionally well."* This is just one owner's reaction to the new Lorain-26. See your Thew-Lorain Distributor. He can show you Lorain-26's at work.

AND HERE'S WHY—this combination of features found in no other machine!

New Lorain "E-Z" Controls • "Big Look"—larger, wider cab for greater operator comfort • "Hydra-Ease" power control of crawler steering, tread lock, house lock and shifting of swing-travel jaw clutches.

Hydraulic Coupling power take-off for no-stall, no-shock, "never-say-die" smooth application of power • No digging shocks transferred to mechanism.

5 identical, Interchangeable Shoe Clutches • Bigger clutches with 18% more capacity, plus new, easier action, longer-life design • 19 anti-friction bearings on power shafts and clutch drums.

19 ft. shovel boom for maximum reaches—powerful, independent cable crowd • Much greater weight—over 47,000 lbs. as a shovel • 15-ton crane capacity with 2-piece pin-connected boom • Power load lowering standard • Ability to back-down the load • Third Drum available.

Newly-designed, sturdier, wider, 2-speed Crawlers with 29-inch wide drop-forged treads • 2 crawler speeds in both directions • Oil-enclosed crawler travel mechanism • 4-way, positive Tread & Travel Lock—fully enclosed.

Truss-type Turntable Bed • Hook Rollers—front 2 are on anti-friction bearings.

THE THEW SHOVEL CO., LORAIN, OHIO

THEW LORAIN®

For more facts, use Reader-Reply Card opposite page 18 and circle No. 212

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This newest and largest Blue Brute in the line of Worthington portable rotary compressors has a cfm rating of 600.

New air compressor delivers 600 cfm

■ A new portable rotary compressor rated at 600 cfm has been announced by the Worthington Corp. Streamlined styling, new design, and engineering changes also distinguish this new larger model in the company's compressor line.

The Blue Brute 600 has a new easy-acting clutch which allows operators to warm up the engine before cutting in the compressor. This feature is said to result in less wear, quicker starts in cold weather, and simplified engine maintenance. The fully self-draining compressor eliminates settling of oil and moisture in any low areas of cylinders, interstage chamber, or discharge point. The cylinder arrangement gravity-drains all oil and moisture during shutdowns.

Additional features of this model include a two-stage oil separator, separate oil reservoir and air tanks, and a shorter wheelbase for easier handling on the job.

For further information write to Worthington Corp., Worthington and Harrison Aves., Harrison, N. J., or use the Request Card at page 18. Circle No. 49.

Concrete-placing rig

■ A concrete conveyor-car for use in bridge construction is described in a folder issued by Penn Iron Works, Inc., Reading, Pa. Photographs illustrate the operation of the concrete-placing machine, which has four hoppers with a combined capacity of 6 cubic yards. Simple operating details are given, along with complete specifications concerning weight, dimensions, construction, and power plant.

To obtain this folder write to the company, or use the Request Card at page 18. Circle No. 34.

Protective headgear

■ A complete line of protective devices for the eyes and face are illustrated and described in a catalog from the Welsh Mfg. Co., 9 Magnolia St., Providence, R. I.

These products include face shields of fire and shatter-resistant transparent cellulose acetate, chippers' goggles, welders' goggles, Fiberglas welders' helmets, Plastiglass hard hats, and special goggles and masks.

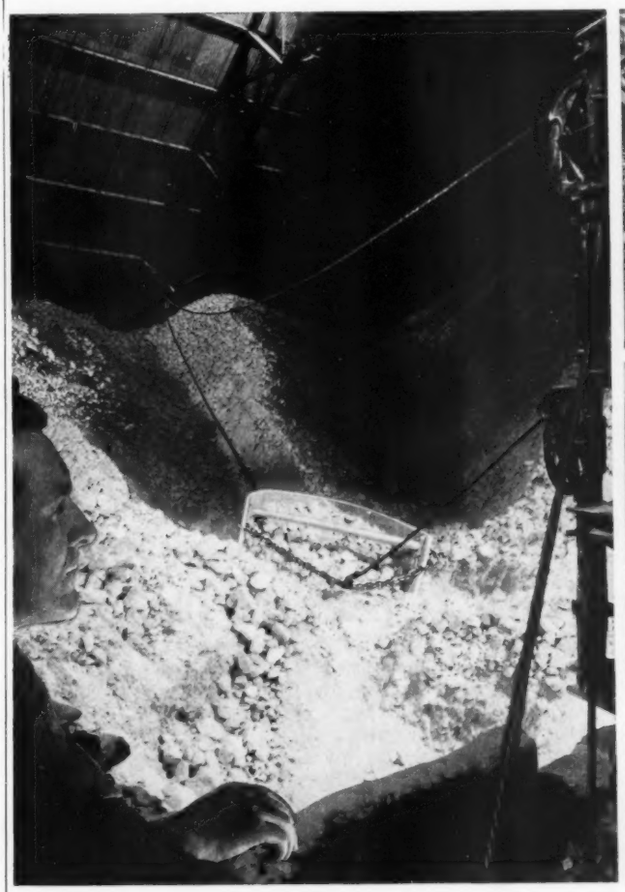
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 197.

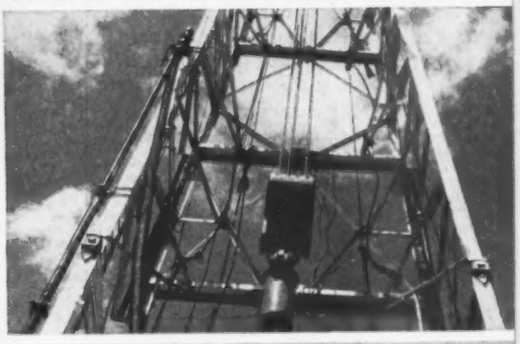
Flexible hose withstands unusually high pressure

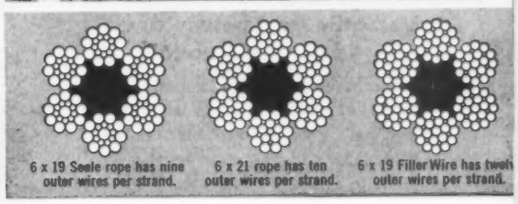
■ High-pressure flexible hose line said to be capable of withstanding unusually severe surge peaks in hydraulic applications has been announced by Aeroquip Corp.

Available in ⅜, ½, and ¾-inch sizes, the new No. 1508 hose will perform satisfactorily at 5,000-psi operating pressures in the ⅜-inch size and at proportionate pressures in the larger sizes, according to the manufacturer. The two larger sizes use Aeroquip's standard detachable and re-usable fittings, while a special socket has been designed for the ⅜-inch line. The new hose will reportedly withstand surge pressures 15 to 20 per cent higher than Aeroquip's standard high pressure hoses.

For further information write to Aeroquip Corp., 300 S. East Ave., Jackson, Mich., or use the Request Card at page 18. Circle No. 15.






6 x 19 Seale rope has nine outer wires per strand.
6 x 21 rope has ten outer wires per strand.
6 x 19 Filler Wire has twelve outer wires per strand.

What can you do better with 6 x 21 *Red-Strand* wire rope?

What is 6 x 21 wire rope? It is sometimes called 6 x 16 Filler Wire. It is a construction of intermediate flexibility—between coarse 6 x 19 Seale and flexible 6 x 19 Filler Wire. 6 x 21 is a good choice where the operation includes abrasion and at the same time the rope is subjected to considerable bending. On certain types of duty the choice is vital to save time, effort and money.

When to use it? If, for example, your 6 x 19 Filler Wire rope is wearing out too soon because of abrasion, 6 x 21 with larger outer wires may provide much longer life. If severe bending is damaging your 6 x 19 Seale, a change to more flexible 6 x 21 may be profitable.

It is used on certain dragline jobs, vertical shaft hoists, drag and slackline scrapers, inclines, rotary and cable tool drilling rigs, and other equipment.

Can you use it to advantage? The best answer to that question comes from your Leschen technical man. Leschen representatives will help you get the most out of your wire rope. And with Hercules Red-Strand—as with all other Leschen wire rope, you are assured of *higher-than-rated quality* for *longer-than-expected service.*

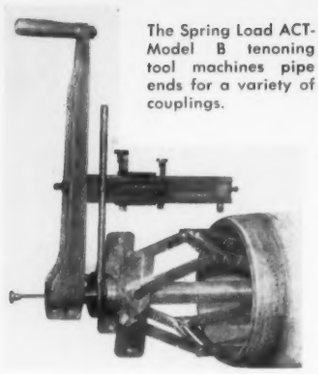
See your Leschen man soon. He can easily be reached through your nearby Leschen distributor.

LESCHEN
HERCULES *Red-Strand*® WIRE ROPE

Depend on Leschen's higher-than-rated quality for longer-than-expected service.

LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.
St. Louis 12, Missouri

For more facts, use Reader-Reply Card opposite page 18 and circle No. 213



The Spring Load ACT-Model B tenoning tool machines pipe ends for a variety of couplings.

Versatile tenoning tool machines pipe ends

■ A new asbestos-cement pipe tenoning tool offered by the Spring Load Mfg. Corp. reportedly saves engineering time by eliminating the need for figuring and specifying short lengths. The ACT-Model B machines asbestos-cement pipe ends for Ring-Tite, Simplex, and tapered couplings; Roto-Split flanges; and poured flange assemblies, as well as making closures and end facings.

Changing the cam plate adapts the tool for cutting any type profile. Completely automatic feed and quick release are said to make the Model B the fastest tenoning tool developed to date. According to the manufacturer, this is the only tool which will make all the cuts and profiles necessary for modern asbestos-cement pipe installations.

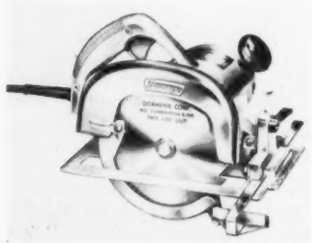
The tool is light in weight, and may easily be operated by one man.

For further information write to Spring Load Mfg. Corp., 3619 First Ave. S., Seattle 4, Wash., or use the Request Card at page 18. Circle No. 54.

Versatile new power saw offered in three models

■ Dormeyer Corp. is marketing three models of a new power saw whose design enables the 6½-inch blade to cut 2×4 lumber at 45-degree bevel with blade to spare.

Positive fingertip adjustment permits depth of cut from ¼ to 2 3/16



inches and bevel cuts from 0 to 45 degrees. An eye shield provides protection against chips and dust.

The Model 710 has ball and self-lubricating bearing construction, and the Model 720 has ball and needle bearing construction. Both saws have rip fence guides for accurate width cutting.

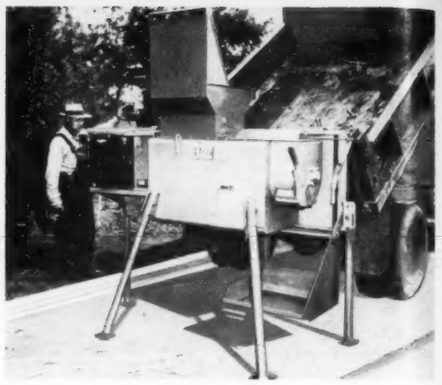
For further information write to the Power Tool Division, Dormeyer Corp., Kingsbury & Huron Sts., Chicago 10, Ill., or use the Request Card at page 18. Circle No. 81.

Asphalt-patch mixer with improved design

■ Wylie Mfg. Co. announces a new improved model of its Heat-A-Mix tailgate asphalt-patch mixer. The Heat-A-Mix is a compact, high-capacity pugmill and material heater, self-contained with its own gasoline engine and propane or kerosene heating system.

New features incorporated in the Model 30-R include a forward-and-reverse transmission, which reportedly makes it possible to retain material in the pugmill until it reaches the temperature desired. The design of the heat-jacketed pugmill also makes it flashproof, with no direct flame in contact with asphalt material.

Equipped with removable, adjustable legs, the entire unit can now be quickly transferred on the road from one truck to another without a crane or hoist.



The Heat-A-Mix Model 30-R asphalt-patch mixer has removable legs for easy transfer from one truck to another.

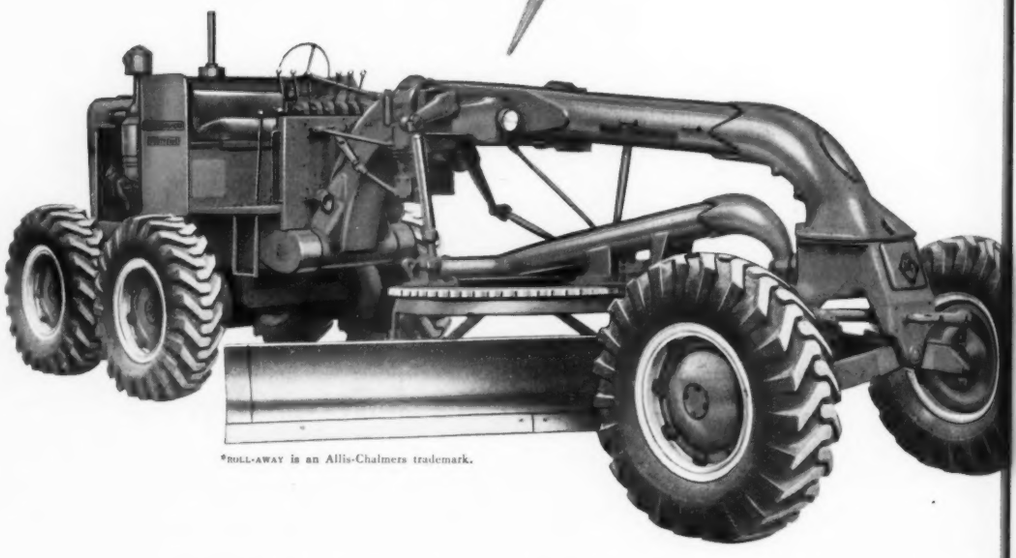
For further information write to Wylie Mfg. Co., P. O. Box 7086, Oklahoma City, Okla., or use the Request Card at page 18. Circle No. 48.

NEW BIG SCALE PERFORMANCE

NEW OPERATING EASE AND COMFORT

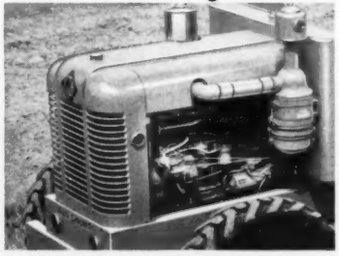
ALLIS-CHALMERS

BIG NEW

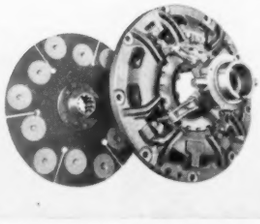


*ROLL-AWAY is an Allis-Chalmers trademark.

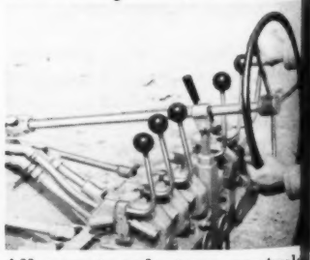
Major advantages that mean more production



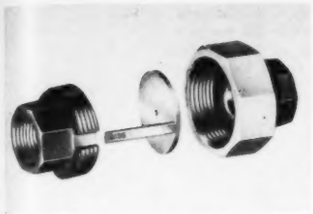
Powerful new Allis-Chalmers diesel featuring exclusive "follow-through" combustion for smooth performance, clean combustion, extra-long life.



Exclusive new ceramic clutch lining sets new standards of long clutch life, keeps clutch operating longer between adjustments, reduces lever pull.



All-new toggle-type control give a *Forty Five* operator precision control with positive "feel" — in addition to easy finger-tip action regardless of load.



The easily-read tab on this orifice unit identifies the orifice size.

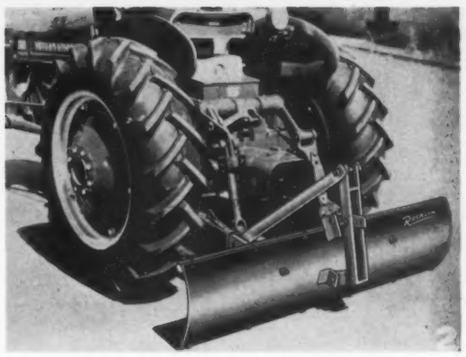
Tab on new steel fitting identifies orifice size

■ Watson-Stillman Fittings Division of H. K. Porter Co., Inc., has added to its line of forged steel fittings a 3,000-pound tab orifice union for instrumentation and process-control piping.

This union is said to eliminate errors of orifice plate identification, since the orifice size is plainly stamped on a stainless steel tab that protrudes through a slot in the end piece of the union.

The orifice plate is easily removed for changing flow conditions. The connecting pipes need not be pulled back any farther than is required to slip the plate from between the two union ends.

For further information write to Watson-Stillman Fittings Division, H. K. Porter Co., P. O. Box 95, Roselle, N. J., or use the Request Card that is bound in at page 18 of this issue. Circle No. 7.



The Rocklin rear-mounted scraper and leveling blade for International and Farmall tractors.

Announce complete line of tractor attachments

■ A complete new line of attachments for International and Farmall tractors is announced by the Rocklin Mfg. Co. Grader and scraper blades, a mobile saw, a tractor crane, and a bumper carrier unit comprise the new line.

A center-mount grader blade for the International 300 has a four-way reversible hard cutting edge, and angle, pitch, and out-of-parallel adjustment. Measuring 66 inches wide, the blade is said to be ideal for road grading and maintenance, as well as for dirt, snow and debris removal.

Designed for use with the International 300 and Farmall 200, 300, and 400 tractors is a rear-mounted scraper and leveling blade. This reversible 66-inch steel blade scrapes, levels, pushes, and piles, and is said to be especially useful for backfilling.

The Rocklin Sawmobile attaches directly to the International Fast-Hitch and three-point adapter. Equipped with a 30-inch circular steel saw blade, the attachment fells trees, bucks limbs, saws logs on the ground, and clears brush. It converts quickly from horizontal to vertical sawing positions.

A heavy-duty tractor crane available for International and Farmall tractors mounts on the Fast-Hitch and three-point adapter to handle heavy lifting, loading, and moving jobs. Easy adjustments are provided for height and reach of boom, and the unit may be operated in any position from the driver's seat.

A bumper, carrier, and tow unit completes this new line of attachments. As an extra-heavy-duty bumper, it provides positive protection for tractor grill and front end while pushing or pulling heavy loads and working in dense bush. Hinged construction converts the bumper into a sturdy front carrier for light loads. The addition of the Rocklin tow bar provides a low-cost tractor tow.

For further information write to Rocklin Mfg. Co., 110 S. Jennings St., Sioux City, Iowa, or use the Request Card that is bound in at page 18. Circle No. 13.

orty Five MOTOR GRADER

120 HORSEPOWER • 23,800 POUNDS

The *Forty Five* is a truly modern heavy-duty motor grader . . . designed for progress and built to *today's* standards of accuracy, dependability, operating ease and low cost. On any construction or maintenance job, you'll see all the advantages of balanced power, weight, traction and proper speeds . . . plus brand new advantages for the operator and mechanic that no other heavy-duty grader offers.

We invite you to check the features shown here. Then for the full story on the *Forty Five* — including extra-big clearances, exclusive ROLL-AWAY* moldboard, single-member tubular frame and fully enclosed power steering —see your nearby Allis-Chalmers dealer.

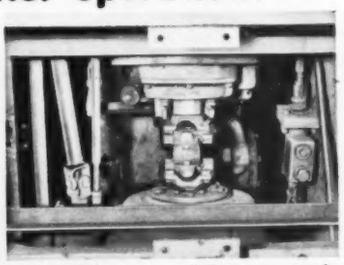
CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

ss maintenance . . . easier and better operation!

w accelerator-decelerator al lets the operator increase decrease engine speed with his — without changing his hand ttle setting.

"Box seat" comfort and visibility. Foam-rubber seat adjusts for sit-down or stand-up operation. Flat, roomy platform has tapered corners for top blade visibility.



Matchless servicing accessibility. Unit construction permits easy service or removal of clutch, transmission or engine without disturbing adjacent parts.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 214

Thomas Industries news

A new wholly-owned subsidiary, the White Corp., Milwaukee, Wis., has been acquired by Thomas Industries, Inc., Louisville, Ky. All of White's outstanding stock was exchanged for 10,000 shares of Thomas Class A common stock.

At the same time, the Moe Light Division of Thomas opened a new plant in Hopkinsville, Ky.

Canal excavation is started by a Wooldridge 18-yard scraper with Caterpillar D8 tractors pushing and pulling. A fleet of these units carried excavation down to canal berm elevation.

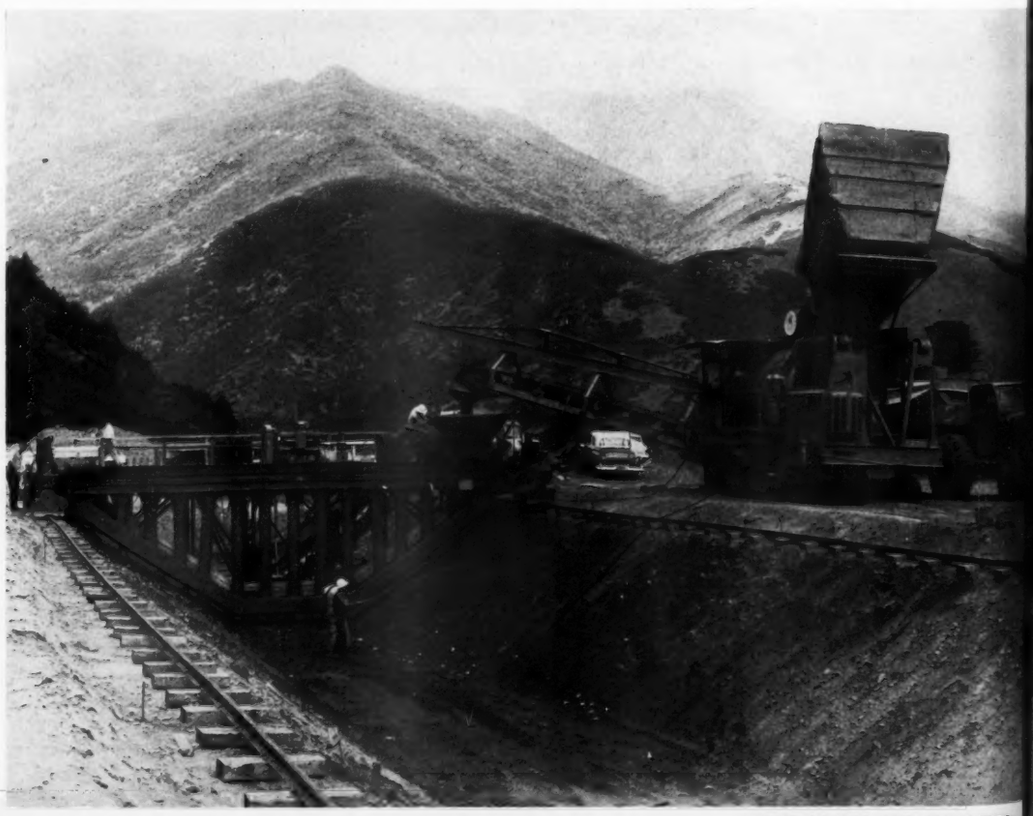
Allocatio nd expedit .6

Slip-form places gravel lining and speeds concrete paving; new drill and lightweight curing machine facilitate work

Using a slip form to place a gravel lining in a stretch of the 7.6-mile Gateway Canal in Utah before moving back to place the concrete is one of the effective means Morrison-Knudsen Co., Inc., Boise, Idaho, is employing to speed work on this U. S. Bureau of Reclamation contract.

Started October 1, 1954, and scheduled for completion by May, 1957, work is moving so fast that M-K will probably finish the job by the end of this year—18 months ahead of schedule. The firm's contract covers construction of the entire canal, which ties into the inlet portal of Gateway Tunnel and runs up the Weber River Canyon. Seven main siphons will carry water down steep canyons and up the other sides to an elevation ap-

As the 10-foot-bottom canal reaches full depth, a McCoy sheepsfoot roller compacts the berm while a tank truck stands by to supply the water. Side slopes are being dressed by a Cat No. 12 motor grader.



The gravel lining of the canal, consisting of 2½-inch-minus material, is placed by a Gunnert-Zimmerman slip-form paver. Gravel is placed during the swing shift, the slip form moved back, and concrete placed during the day shift.

nd use of rigs
.6-mile canal job

As the self-propelled slip form rides along the canal on rails, a small hopper moves across the machine, bringing gravel to the 14 tubular distribution chutes. Moisture is applied to the sand-gravel mix in the Koehring 34-E Twinbatch paver.

proximately equal to that at the starting point. A total of 80 miscellaneous structures, including checks, drains, crossings, bridges, underdrains, turnouts, and wasteways, are included in the contract. Most of these are small, the biggest being the Gateway Tunnel terminal structure.

All this work involves 1,040,000 cubic yards of canal excavation; 17,000 cubic yards of concrete for the canal lining; 5,000 yards of concrete for structures; 100,000 yards of structural excavation; 140,000 cubic yards of compacted embankment; and 2,000 linear feet of 11-foot-ID, 8-foot, 22-ton joint siphon pipe.

Unusually good organization and use of equipment are the principal reasons why the job has been done so swiftly to date. Even last winter, when there was 2 feet of snow on the ground and temperatures dropped to 15 degrees below zero, project manager I. D. Robbins had his crews constructing a spillway bucket below the Weber River's floor near Morgan. Despite the temperature, wellpoints were used to complete this work during months when the river was dry.

Structures subcontracted

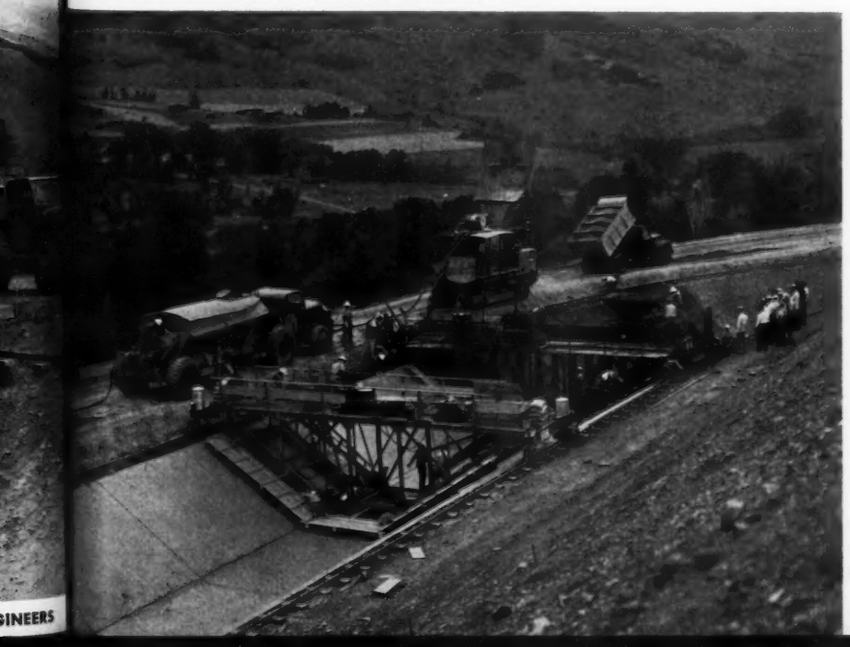
One of Morrison-Knudsen's first moves was to subcontract construction of the small concrete structures to A. S. Horner Construction Co., Denver, Colo., a firm specializing in concrete. Project manager Robbins then set up canal work on this plan: dirt equipment moved in first to pioneer the route of the canal and get it roughed in approximately to the top level of the canal berms. This was the initial work on the canal, which will have a 10-foot bottom, 1½ to 1 side slopes, and 4 inches of portland-cement concrete lining applied over 4 inches of free-draining gravel cushion.

After this, structure excavation started, the work being done in close

(Continued on next page)

The slip form passes by, leaving a 4-inch gravel lining on the canal bottom and side slopes. Sand is mixed with the gravel to make it more cohesive as it is laid in the canal.

The paving spread rides along the canal berm as batch trucks dump to the Koehring 34-E paver. Concrete travels by conveyor belt to the slip form, which vibrates material as it is placed. Finishers ride a jumbo behind the slip form.



Two men push the lightweight aluminum spray rig applying Sealtex curing compound to the fresh concrete. Built by Techkote Co., Inc., the rig strains the compound twice before applying it.

A Hystaway hoist on a Cat tractor uses a long boom to place rail sections ahead of the canal-lining equipment. Sections are jumped around the paving train by a flatbed trailer towed by the Cat.

coordination with A. S. Horner. As the sub-canal-level works were completed, earthmoving machinery again went to work, bringing the trench to final grade so that the canal could be built and lined. The final step will be the construction of overhead structures, such as flumes, bridges, and crossovers to carry irrigation lines and roads across the canal.

About 4,000 feet of the canal presents a problem which as yet is still unsettled. In this area is an expansive clay which may prove troublesome if the concrete lining is placed too close to the swelling material. Two possible procedures are currently under study for dealing with the problem. One would have the canal over-excavated by 18 inches, the over-excavation filled in with gravel, and the canal left unlined. The second would have the clay subgrade first sealed off by catalytically-blown asphalt to create a watertight membrane, permitting gravel to be placed to the original grade line and the concrete lining applied.

Initial excavation

The first phase of excavation was a tough operation tackled by several Caterpillar D8 tractors with angledozers. These gouged out a rough outline of the top of the slope. With the exception of a few rocky areas, where about 30,000 cubic yards of rock was shot, the material was handled successfully by tractors and scraper equipment.

In the first Cat spread there were five D8's with five Wooldridge 18-yard scrapers, assisted by two Caterpillar D8 pushers. These excavated down to the elevation of the canal berm. This was all short-haul work. A few troublesome rock pockets were encountered, but many stretches, instead of being drilled and shot, were handled successfully by a Caterpillar D8 with a rear-end Ateco hydraulic ripper. Equipped with Esco teeth hardfaced with a self-hardening Stoody-rod, this ripper worked well, was set out of the way when not actually in use, and eliminated a time loss when crews had to get up close to slopes, according to Robbins.

Following the first tractor spread was a fleet of three scrapers, assisted by one D8 push Cat. Plugs were left in the canal about every 500 feet so that the loaded scrapers could leave the ditch. The canal sides were dressed by Caterpillar No. 12 motor graders, and loosened dirt was picked up by the scrapers. The best cleanup rigs operating in the 10-foot canal bottom were three Caterpillar DW10's that removed the last foot or two of material, plus the canal plugs. For a short time, two Caterpillar D9's with 5 × 14-foot dozer blades were also used for dozer work. This was actually no test for the powerful new equipment, for the excavation was well along when these machines moved in.

A special drill built on a Caterpillar tractor for jobs in M-K's railroad division was used in heavy cuts where drilling was necessary. The Cat-mounted Worthington air compressor and two Worthington wagon drills, using regular steel and tungsten-carbide bits, quickly put down the needed powder holes and moved on to their next assignment. Only a half a pound of powder per cubic yard was needed to loosen the material so that it could be dozed out or removed by tractor equipment. Electric blasting

GRAVITY dumps the load...in

One of 80 structures being built on the canal by A. S. Horner Co., Denver, Colo., this one will route Weber River water through Gateway Tunnel for irrigation purposes or dump it down a wasteway.

delays were used occasionally to cut slope lines out to true grade lines.

Heavy compaction, particularly on high embankments where the canal level had to be built up to grade, was needed on some of the dirt work. In these places the best dirt was used, and moisture, if needed, was added by water trucks. Two heavy USBR-specification rollers, a Southwest and a McCoy, delivered the necessary compaction in about eight passes. Flat lifts not more than eight inches thick and good moisture distribution permitted these rollers to do good work in a minimum of time.

Installation of structures

Canal and structure excavation was carried on simultaneously by M-K and the Horner organization. Three draglines opened places for the structures: a Northwest 95 was used for heavy excavation; a Northwest Model 6 for intermediate work; and a Koehring 304 for light excavation for smaller structures. A small Lorain Moto-Crane was used for small culvert pipe. All this pipe of 24 through 48 inches in diameter was Cen-Vi-Ro concrete, made by a patented process owned by Morrison-Knudsen.

One of the biggest and most dangerous jobs on the project was the installation of 11-foot-ID reinforced-concrete pipe for the heavy-duty siphons. Each joint of this pipe weighs 22 tons and involves a 70-mile haul from the manufacturing point at Pleasant Grove, Utah, where the United Concrete Pipe Corp. manufacturing plant is located.

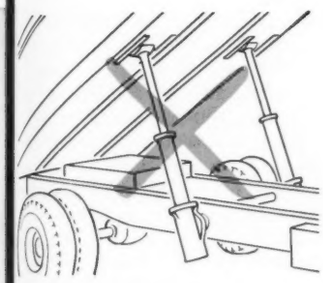
The size of these pipe joints gave rise to a number of problems aside from those involved in its placement. If they were stood on edge on a truck for shipment, the load was over height. If they were laid on end, the load violated width regulations of the Utah State Road Commission. It was finally decided to transport the pipes standing on edge, even though trucks hauling the joints had to detour around underpasses. A special permit was secured for each load of short end sections, which were hauled lying down in trucks.

Installation of the pipe also meant problems for the contractor. This work was done by a Bucyrus-Erie 54-B crawler with 65-foot boom and multiple-way blocks on its load line. The rig handled sections of pipe sometimes from pioneer roads cut by dozers. Some of the lifts were so dangerous that a snub line from the rear winch of a Caterpillar D8 tractor was hooked onto the gantry frame of the 54-B to steady the machine. One 22-ton lift was made with the boom of the 54-B at a 42-degree angle.

As the sections went in, two parallel Tirfor cable hoists were used inside the pipe to pull each section into position. Cables from these hoists were attached to a timber buckstay placed across the face of the section being installed. The hoists themselves were snubbed to deadmen back in the pipe. A rubber-gasket joint connection of the sections will permit the siphons to operate under high pressure without leaking.

The Horner organization built the structures rapidly. At a central point in the job, the firm set up a main carpenter yard where the forms for each structure were detailed, laid out, and manufactured. After being hauled to the job, the forms were set in place

.in ONE second



Koehring Dumptor® has no body hoist

Operator drives up, trips the body-release lever — and *gravity* tilts the 6-yard body 70 degrees. One second later the load is out, and Dumptor is on its way back for the next load. It's as simple and fast as that!

There's no 15 to 25-second wait for slow-acting body hoists — no expensive hoist replacement parts, maintenance or down-time. And, you get the same one-second dumping *every time*, under heaviest loads, in all temperature extremes, because Koehring *gravity-dump* never balks — never wears out.

One-second dumping earns a substantial increase in yardage output, too. For example — take a typical 1,000-foot haul where you would normally make 16 trips an hour. By saving an average of 20 seconds dump-time on each trip, Dumptor gains 320 seconds, or 5.3 minutes more productive haul-time per hour. You get 17½ trips, instead of 16. This, alone, adds 9% to hourly production.

This saving is typical of Koehring Dumptor's basic principle — to reduce all non-productive time to a minimum — to increase work-time for more yards per day. See Koehring distributor for complete information.

KOEHRING COMPANY

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K840

Subsidiaries: JOHNSON PARSONS KWIK-MIX

Saves 20 seconds every time it dumps— **Heaviest loads are dumped instantly. Tilting Dumptor body rolls on heavy-duty rockers. Snub chains attached to big shock absorbers check the body at approximately 70-degree tilt.**

Shuttles back and forth without turning — **Dumptor operates with equal ease in either direction. Constant-mesh transmission gives the same 3 travel speeds forward and reverse. Every turn eliminated cuts 15 seconds off cycle time.**

64 square-foot loading target— **Big, square body opening permits loading over either end or sides. Top edge and bottom are box-beam constructed. Sides, ends, heavily rib-reinforced. ½"-thick kick-out pan bolts to floor for rock work.**

For more facts, use Reader-Reply Card opposite page 18 and circle No. 215

A Model 2-A Travel Batcher, made by Southeast Ready-Mix Concrete Co., Salt Lake City, transfers dry-mix batches to Challenge truck mixers at the site.

by a small truck-crane, and given final adjustments by carpenters.

Wherever possible, Universal's Uni-Forms were used. In other places, plywood facing was nailed either to studs or longitudinal 1×4 nailing strips. Forms were held together either by Superior steel ties or by steel she-bolts.

Early in the job, truck-mixed concrete was supplied by a commercial plant in Ogden, but later, when over-mixing and heat became factors to consider on the bigger pours, a transfer system of batching was used. A Model 2-A Travel Batcher, manufactured by Southeast Ready-Mix Concrete Co., 6500 Holladay Blvd., Salt Lake City, was set up, permitting dry batches to be hauled in from Ogden. The machine placed the batches into truck mixers which delivered to the job. The concrete was placed either from the truck mixers or was loaded to a Gar-Bro transfer hopper which fed Gar-Bro buggies hauling the material to the pour. Concrete was consolidated with Viber electric vibrators, and the fresh material was given an application of Sealtex white pigmented concrete-curing solution.

Slip form does double duty

A conventional slip form, being used to place a free-draining layer of gravel, has solved the problem of placing 4 inches of 2½-inch-minus gravel on the canal side slopes and bottom in a uniform and satisfactory manner. Enough sand is used to increase the cohesiveness of the mix, which first passes through a Koehring 34-E Twinbatch paver where moisture is applied and mixing is done. The material is spread by the same Gunnert-Zimmerman slip-form paver that places the lining concrete.

This operation is well organized. Gravel is placed during the swing shift, and the equipment is moved back to the start of the run during the night, so that it will be in position to start concreting on the day shift. Daily production of both the gravel lining and concrete is virtually synchronized.

The slip form has 14 distribution chutes for the placement of material. Its tubular-type vibrators are rated at 3,500 rpm, standard for canal lining machines. Self-propelled by Caterpillar diesel power, the machine has a small hopper which moves rapidly across the full width of the rig to distribute concrete evenly.

Concrete materials from the Clarence Waterfall gravel plant at the mouth of Weber Canyon are being hauled 10 miles to Peterson, at the central portion of the project, where a Conveyco batch plant has been set up. These materials are stacked in radial piles before moving into the plant to be rescreened to meet USBR specifications. Batches are being hauled by a fleet of trucks, each of which carries four 1.42-cubic-yard batches to the Koehring 34-E Twinbatch paver working on the canal berm. A Conveyco electric-driven conveyor brings concrete from the paver to the distribution hopper on the Gunnert-Zimmerman slip form.

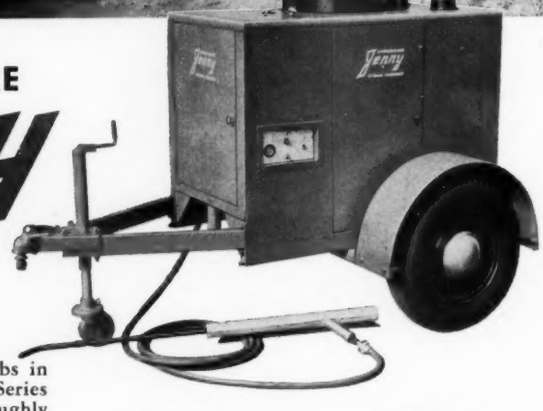
Several Rex and Jaeger centrifugal pumps with standpipe setups bring mixing water from the Weber River to a 4,000-gallon water trailer located behind the paver. Durair air-entraining agent is also carried nearby.

The fresh concrete turned out by the Koehring paver travels up a conveyor belt, and is dumped into the distribution hopper on the slip form to be routed through the 14 chutes. At the same time, the material is vibrated when a pressure plate on the slip form, carrying tubular vibrators, passes over the surface. Very little finishing has to be done once the slip form passes by.

A short finishing jumbo carries about six finishers who do minor patching and finishing, install ladder rungs, cut transverse 1¼ × ½-inch contraction joints on 16-foot centers, put in flapper valves on 16-foot centers for the resistance of hydrostatic uplift against the slab, and cut a longitudinal groove about 1 foot up from the toe on each side of the canal. None of the grooves requires filling, but a Techkote elastic filler is

get hundreds of
EXTRA WORK HOURS
per year
from your heavy equipment
with
New Series "3000"

HYPRESSURE
Jenny
STEAM
CLEANER



Built for the most difficult cleaning jobs in the construction industry, new, powerful Series "3000" Hypressure Jenny cleans so thoroughly that hours upon hours are saved in preparing machinery and equipment for overhaul or repainting. Additional time is saved on each repair job, too, because mechanics working on grime-free surfaces can do the job at least 25% faster!

Each "down-time" hour that you save, means another productive work hour for your machinery, equipment, or trucks. And with Hypressure Jenny, those savings are so great that Jenny repays its cost on an average of four times a year.

Today, no construction contractor can afford to be without Hypressure Jenny. Your choice from more than eighty different sizes and types assures the *right* Steam Cleaner for your needs.

Note These New, Series "3000" Hypressure Jenny features

- 300 Gallons Per Hour Capacity.
- Supplies Up To 4 Cleaning Guns Simultaneously.
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Why not send for complete information about how Hypressure Jenny can help cut "down-time" and increase work hours from your equipment? There's no obligation; and you'll be glad you did.

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For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 216

being used where the concrete lining meets structures.

The last machine in the line is a special spray rig built by Techkote Co., Inc., Inglewood, Calif., which applies the Sealtex compound to the concrete evenly and without wasting material. Built entirely of aluminum, the rig is so light that a 1½-ton truck hauled it from Los Angeles to the project. The machine is moved along by two men, one on each side of the canal, who push against a handle located on either side. It has a series of spray nozzles, fed by a rubber hose, through which the Sealtex is pumped under pressure from a supply truck. The curing solution is strained twice —once as it enters the machine and again as it passes through special strainer-type spray heads. In case one spray head fails to work, conventional hand sprays on each side of the machine can be brought into use.

Personnel

All work with Region 4, U. S. Bureau of Reclamation, is under the general direction of E. O. Larson, regional director of the USBR in Salt Lake City. Clinton D. Woods is project manager of the Weber Basin project, assisted by L. R. Dunkley, construction engineer. Ross D. Billings is resident engineer on the Gateway Canal.

Assisting project manager I. D. Robbins of Morrison-Knudsen Co. are J. E. Ricker, lining consultant from Morrison-Knudsen's Yuma, Ariz., works; Russ Healy, excavation superintendent; William Burns, lining superintendent; Fred Scales, lining foreman; Tom Randall, job engineer; George Skelton, master mechanic; and J. B. McClelland, office manager.

THE END

Lincoln Arc Welding grants student awards

Awards for mechanical and structural designs by engineering students have been made by the James F. Lincoln Arc Welding Foundation, Cleveland, Ohio, sponsor of the annual design competition.

First prize, $1,250, was awarded to Lee Allgood of the University of Michigan for his design of a stamping die of welded construction. The die, suitable for low-quantity construction, costs only 20 per cent of the price of conventional dies.

Donald Croll of the University of Cincinnati received second prize of $1,000 for a TV or radio-transmission tower of welded tubular construction, and Herman Greif of the University of Detroit was awarded third prize of $500 for his design of a welded shaper.

Clark names sales manager for transmission division

Donald E. Stoops has been appointed manager of distributor sales for the transmission division of Clark Equipment Co., Jackson, Mich. He will be in charge of distributor sales for the company's line of transmissions and torque converters, and will supervise merchandising.

Conveyor with choice of frame, drive units

■ A portable conveyor-belt unit available in lengths up to 24 feet and recommended as a material hoist on smaller construction projects is marketed by the New London Engineering Co., New London, Wis. The conveyor is recommended for handling concrete blocks, roofing materials, bags of cement, etc.

Available in standard lengths of 12, 14, 16, 18, 20, 22, and 24 feet, the New London Cost Cutter conveyor is offered in both steel and aluminum models. Either a Briggs & Stratton 2½-hp gasoline engine or a 1/3-hp 115-volt single-phase electric motor is offered as standard power unit for either model.

The New London Cost Cutter conveyor.

The 12-inch-wide belt, fabricated of 3-ply 28-ounce duck, has a rubber rough top. Belt speeds are 60 feet per minute for the electrically-driven models and from 48 to 72 feet per minute for the gasoline-driven models.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 190.

Joins research group

The Building Research Institute, part of the division of engineering and industrial research of the National Academy of Sciences, Washington, D. C., has accepted the Reynolds Metals Co., as a member. Participating representatives of Reynolds to the Institute are Robert F. Seery, Grant Clark, Robert J. Hume, Lyon Evans, Paul Brandt, and Dick Hafer.

Now–Two Heaters for the price of One!

. . . from gasoline engine . . . to electric motor in 20 minutes

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HERMAN NELSON "UTILITY" Portable Air Heater

The *first* portable heater that offers interchangeable power plants . . . motor drive where you have electric current, or gasoline engine for remote job sites. Gives the *most* heat for the *least* fuel of any heater.

The "Utility" will operate overnight without re-fueling. Also operates with either gasoline or fuel oils, without need of adjustments. It may be used with or without ducts, and with or without venting, depending on job or location. Engineered for utmost safety, with automatic overheat cut-off, and safety trip valve that shuts off fuel when the prime mover stops.

The simplest of all portable heaters to operate and care for, the "Utility" has a manual heat control, and self-cleaning burner. 75,000 to 425,000 BTU capacity. Write for free literature on the *complete new* Herman Nelson line!

Ask about the complete line!

"De Luxe" Model
Oil Fired. Electric motor powered. 280— 450,000 BTU capacity. Completely automatic operation.

"Thrifty" Model
Oil Fired. Electric motor powered. 50— 170,000 BTU capacity. New, low price!

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For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 217

NAMES IN THE NEWS

Lt. Gen. Lewis Pick, recently elected chairman of the board of directors of the John J. Harte Co.

Gen. Pick named chairman of engineering firm

Lt. Gen. Lewis A. Pick, retired chief of the U. S. Army Corps of Engineers, has been elected chairman of the board of directors of the John J. Harte Co., architects, engineers, and construction managers of Atlanta, Ga. In his new position, Gen. Pick will be responsible for major foreign construction projects and domestic highway, port, and industrial developments.

While associated with the Corps of Engineers, Gen. Pick directed construction of the Ledo Road in North Burma during World War II, harbor and river developments in the U. S., and bases in Africa and in Thule, Greenland.

Asphalt Institute makes two appointments

Harry J. Thompson has been appointed assistant Atlantic-Gulf Coast division engineer by the Asphalt Institute, College Park, Md. Formerly an asphalt-plant inspector with the New Jersey Highway Department, Mr. Thompson will make his headquarters in New York City.

An expert on bituminous mixtures, Bernard F. Kallas, has joined the Asphalt Institute, College Park, Md., as assistant director of laboratory activities. He was formerly associated with the South Dakota State Highway Department.

A civil engineering graduate of Johns Hopkins University, Mr. Kallas is a member of the Society of Asphalt Paving Technologists and is a junior member of the American Society of Civil Engineers.

Army engineers appoint two supervising officers

Lt. Col. Jack R. Harris, is area engineer for the U. S. Army Corps of Engineers' recently established office in Ottawa, Canada, which will supervise construction of U. S. Air Force radar installations in the dominion. Another project, the construction of aircraft warning stations in Labrador and Newfoundland for the Northeast Air Command Terminal Mid-Canada Line is now under the direction of Lt. Col. Anthony Gelardi. He will maintain headquarters in Goose Bay, Labrador.

Dr. Saville elected head of Engineers Council

The dean of New York University College of Engineering, Dr. Thorndike Saville, has been elected president of the Engineers Council for Professional Development. He will administer the council's major function of accreditation of programs in engineering colleges, and will also direct student guidance, professional education, and engineering ethics programs.

Dr. Saville is also president of the Engineers Joint Council, a past president of the American Society for Engineering Education, and a past director of the American Society of Civil Engineers.

AICE presents Fairless with Award of Merit

The chairman of the executive advisory committee of U. S. Steel Corp., New York, N. Y., Benjamin F. Fairless, has been selected for the Award of Merit, presented annually by the American Institute of Consulting Engineers. Mr. Fairless was chosen for his "initiative, inventiveness, . . . cooperativeness, and leadership."

Burton F. Miller has been named deputy executive vice president of the American Road Builders' Association.

ARBA appoints deputy to executive vice president

Through a special action of the board of directors, the American Road Builders' Association has named Burton F. Miller deputy executive vice president. An attorney, Mr. Miller has been a member of the ARBA staff for the past 20 years. He was manager of the association's Contractors Di-

3 NEW BIG GALION GRADE-O-MATIC MOTOR GRADERS

Models
T-700 190 H.P. 40,125 lbs
T-600 140 H.P. 29,800 lbs
T-500 125 H.P. 25,000 lbs with scarifiers

WEIGHT FOR WEIGHT they have more "PUSH-POWER" at the blade than any other motor graders built. They are also the most productive and easiest to operate, because they have what you've always wanted — POWER BALANCED TO MATCH WEIGHT. They utilize their power without useless, costly spinning of the drive wheels. Every part is designed for size, weight, strength, and type of metal to function in proportion to their tremendous "PUSH-POWER" at the blade.

These three GALION GRADERS also have what you now need — GALION GRADE-O-MATIC DRIVES (torque converters and power-shift transmissions). EASY TO SHIFT, much like the best automobiles, the shifting work is done for you. All you do is move the fingertip control levers. You can shift "on the go" in either direction. With the T-700 you have 3 speeds forward, 3 speeds reverse — with the T-600 and T-500 you have 4 speeds each direction — from creeper to high travel speed.

The old type heavy duty FOOT CLUTCH IS GONE, together with its tiresome clutching and declutching. You get FAST WORK CYCLES because you can reverse smoothly and quickly, save time and energy on every operation.

WITH TORQUE CONVERTERS and

THE LAST WORD IN GRADER PERFORMANCE AND VALUES. You'll never believe graders can do so much until you own one of these Galions and put it to work!

vision and its Division of Materials and Supplies prior to his present appointment.

In his new position, Mr. Miller will assist executive vice president Lt. Gen. Eugene Reybold.

Turner Construction Co. honored by civic group

The 42nd Street Mid-Manhattan Association of New York presented the Turner Construction Co., New York, N. Y., with a special-merit award for its contribution to the beautification and modernization of New York City. Turner is presently constructing the 45-story Socony Mobil Building, the world's largest stainless steel skyscraper. (See article on page 38 of this issue.)

Herbert Goodkind joins consulting engineers firm

Herbert Goodkind, formerly associated with Dr. David B. Steinman, has joined Goodkind & O'Dea, consulting engineering firm of Bloomfield, N. J. Mr. Goodkind served as project manager on the Mackinac Straits Bridge in Michigan while with the Steinman organization.

The firm also operates offices in Hamden, Conn., and Malvern, N. Y.

N. Y. Port Authority names new planning executive

Frank W. Herring has been appointed to the newly created position of deputy director for comprehensive planning for the Port of New York Authority. He will be responsible for furthering the authority's long-range planning for the development of its facilities.

Mr. Herring will be succeeded as chief of the planning division of the port development department by Hayden B. Johnson.

Consulting engineers firm names new vice presidents

Richard A. Haber and Joseph F. Bontempo have been appointed vice presidents of Michael Baker, Jr., Inc., international consulting engineering firm of Rochester, Pa.

Mr. Haber, former chief engineer of the Delaware Department of Highways, will head the contract-development division. Mr. Bontempo, architect associate of the Baker firm, will continue in that capacity and will take on additional responsibilities.

Paul D. Smith, recently elected vice president of Intrusion Prepakt, Inc.

Intrusion-Prepakt elects Smith to executive post

Paul D. Smith has been elected executive vice president of Intrusion-Prepakt, Inc., heavy concrete construction firm of Cleveland, Ohio. A director of the company since 1939, Mr. Smith most recently served as vice president of the firm.

He is a member of several accounting societies in the Midwest.

ARBA to hold convention

The 54th annual convention of the American Road Builders' Association, to be held in Miami Beach from January 11 to 14, will feature discussions of federal highway legislation by congressional leaders and officials of the Bureau of Public Roads. Spotlighted in the convention activities is the exhibit of highway materials and supplies.

John M. Robertson, president of the association, has predicted that this year's meeting will draw a record attendance.

New Civil Service exam

An examination for engineers to fill positions with the U. S. Bureau of Reclamation in the Western States and in Alaska will be given by the U. S. Civil Service Commission. Salaries range between $4,345 and $5,440 a year.

Applications may be obtained from any post office or directly from the commission, Washington, D. C. Applications will be accepted by the Central Board of U. S. Civil Service Examiners, Bureau of Reclamation, Denver Federal Center, Denver, Colo.

C. I. T. representatives

Elton R. Petersen has been named C. I. T. Corp's. representative in the installment financing of industrial machinery and equipment in the western counties of Pennsylvania and New York. The firm is a subsidiary of C. I. T. Financial Corp., New York, N. Y. Petersen succeeds Daniel V. McCarthy, now assistant vice president of the company, who is in charge of the five-state Philadelphia division.

John J. McDermott, the new C. I. T. field representative in Maine, New Hampshire, and Vermont, is making his headquarters in Hanover, N. H.

Thomas N. Brown is the Georgia representative for the firm.

Frank W. Kremer will represent the company in western Texas and New Mexico. Kremer will be attached to the firm's Houston division under J. A. Turriff, the assistant vice-president.

It's the "PUSH-POWER" at the Blade that counts!

With these TORQUE CONVERTER and POWER-SHIFT TRANSMISSION combinations, the power is transmitted automatically in an infinite number of ratios. You get, in addition to effortless, automatic shifting, quick increases of torque multiplications to over 300% — automatically as needed. The torque converters also absorb load shocks and prevent engine lugging or stalling.

this kind of smooth, shockless power transmission, less shifting, and balance of weight to horsepower, get more work done easily than you ever thought ible.

VY DUTY DIESEL ENGINES are designed and ched to perform with torque converters and power- transmissions for maximum economy and efficiency ch size grader.

T DECELERATORS — for quickly reducing engine speeds for increased ease of operation, permit immediate to travel speed without changing the hand throttle.

SHAFT GOVERNORS on the torque converters adjust ngine speed automatically to meet all loads or condi- — at any predetermined working or travel speed.

"PUSH-POWER" AT THE BLADE is the only power that counts in rating the efficiency and work production value of a motor grader.

ENGINEERED TO GIVE CORRECT BALANCE OF WEIGHT AND POWER. Graders with too much engine power and not enough grader weight spin their drive wheels, dig in, or side slip. High engine power, if not completely utilized, results in constant fuel waste and excessive tire wear.

GRADE-O-MATIC MOTOR GRADERS retain all the famous GALION features which also make for easy operation and increased production.

VER-SHIFT TRANSMISSIONS

Diesel engine, torque converter, power-shift transmission, and muffler are STANDARD EQUIPMENT on each model. Shiftable moldboard and 4-wheel brakes are standard equipment on Models T-600 and T-700.

- Hydraulic booster steering.
- Extra-large positive traction tires — same size front and rear.
- Extra heavy and rugged front axle assembly.
- Extra sturdy box-type, single member frame; high-arched for maximum blade adjustments.
- Full visibility of work.
- Complete and effortless blade adjustments.
- Full hydraulic operation with fingertip controls.
- Comfortable platform and seat — with stand-up height weatherproof cabs available.

ESTABLISHED GALION 1907

Send for literature and complete information.

HE GALION IRON WORKS & MFG. CO., Gen. and Exp. Offices, GALION, OHIO, U.S.A.
Cable address: GALIONIRON, Galion, Ohio

For more facts, use Reader-Reply Card opposite page 18 and circle No. 218

The International Model 300 wheel tractor, here equipped with a Henry ½-yard front-end loader and Henry backhoe, is recommended for backfilling around foundation walls.

Small wheel tractor with power, versatility

■ A new rubber-tire wheel tractor designed to serve the needs of the small contractor—and some specialized needs on heavy construction projects—has been announced by International Harvester Co. Rated at 42 horsepower, the unit uses more than 20 attachments that are available as optional equipment.

Powered by an IH C-169 gasoline engine, the Model 330 weighs 3,820 pounds—1,000 pounds more than tractors of comparable size and class. The added weight provides greater traction, according to the manufacturer.

The new wheel tractor is available with either standard five-speed transmission or torque amplifier drive. The torque amplifier provides ten forward speeds ranging from 1.5 to 16.7 mph, and gives the advantages of speed and power changes up to 45 per cent on the go without the operator touching throttle, clutch, or shifting gears. With the torque amplifier, continuous power is supplied to drive wheels even when speed is being changed.

Specifications of the new model include: wheelbase, 75 inches; over-all length, 118 inches; over-all width, 59½ inches; rear-axle clearance, 19½ inches; front-axle clearance, 20½ inches; turning radius, 9 feet 8 inches. The tractor is available with a power takeoff, completely independent or transmission-driven, and Hydra-touch equipment control permitting front and rear-mounted attachments to be controlled simultaneously or individually.

For further information write to International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 12.

Twin Disc appointment

The new district sales supervisor for the Twin Disc Clutch Co., Racine, Wis., is R. A. Harmon. He will coordinate marketing and supervise work of seven branch sales offices.

Economical repairing of concrete surfaces

■ A self-bonding material for use in repairing or replacing concrete is manufactured by The Camp Co., Inc. Applied in a thin coat with a trowel, this material is said to eliminate the need for new concrete pours on cracked, badly worn, or rough concrete.

Latex Concrete Topping is said to bind to any clean, stable surface. According to the manufacturer, a 1/16 or ⅛-inch coat, applied at a fraction of the cost and in a fraction of the time, serves the purpose of a new 2 or 3-inch concrete topping.

This material is also said to eliminate the need for curing, since it reportedly will not dry out or powder even in direct sunlight. Water, grease, and oil-resistant, Latex is also recommended for use in repairing brick or mortar joints, stone, slate, or asphalt mastic surfaces.

For further information write to The Camp Co., 6958 S. State St., Chicago 21, Ill., or use the Request Card at page 18. Circle No. 65.

Calcium chloride abrasive

■ A manual containing data on treating, storing, and spreading calcium-chloride abrasives, and the direct application of calcium chloride in ice-control operations has been issued by the Calcium Chloride Institute. Tables and charts on skid-test data and the melting action of abrasives are included. ▸

the Big Three in

All new in design...
New in performance

If you want the utmost in wheeled tractor-shovel performance, you want four-wheel-drive, and for the finest in four-wheel-drive you now have a choice of these three "PAYLOADER" sizes. They're all *new*, and each one is way ahead of its class in digging power, carrying capacity, stability, safety and operator comfort. They all feature an amazing new bucket action and boom arm design that is the big reason for the new performance pace they are setting for contractors, public bodies, mines, quarries, utilities.

There's more horsepower per bucket capacity and many other proven Hough advantages that boost output and lower the cost of digging, scooping-up, loading, moving and piling earth and bulk materials. They all feature torque converter drives and multiple speeds in both directions as well as a new closed, pressure-controlled hydraulic system that minimizes dirt-intake and oil-foaming troubles. Your Hough Distributor is ready to demonstrate these great new "PAYLOADER" units and what they can do for you.

To obtain Manual IM-1 write to the Calcium Chloride Institute, 909 Ring Bldg., Washington 6, D. C., or use the Request Card at page 18. Circle No. 106.

Clark Equipment initiates loan and leasing program

Clark Equipment Co., Buchanan, Mich., has announced that its two wholly-owned subsidiaries, Clark Leasing Corp. and Equipment Finance Co., have completed arrangements with a group of seven banks for a three-year combination term loan and revolving credit totalling $20,000,000. The lease plan is designed to aid firms that do not want to tie up working capital in equipment investment.

Psi conversion chart

■ A chart which gives instant conversion from tons to psi for all standard test cylinders and all standard modular concrete blocks is available from Forney's, Inc., manufacturer of laboratory and plant compression-testing equipment.

Graduated in tons from 5 to 175, and with 30 gradations in cylinder and block sizes, this handy chart gives both the total psi and the psi per ton for each size of cylinder or block. The chart is mounted on 8½ × 11½-inch varnished cardboard.

To obtain this conversion chart, write to Forney's, Inc., P. O. Box 310, New Castle, Pa., or use the Request Card that is bound in at page 18. Circle No. 85.

This tandem model is one of six low-bed trailers offered by Ferree Motor & Equipment Co.

Low-bed trailer line includes six models

■ A new entrant in the low-bed trailer field is the Ferree Motor & Equipment Co., which recently announced a line of six models ranging from 10 to 35-ton capacity.

The Ferree trailer is recommended for hauling all types of heavy-construction equipment. According to the manufacturer, these trailers are light in weight, allowing a larger payload, and still rugged enough to haul any load within their capacity.

The tandem model trailers use a special Ferree tandem designed for greater stability, better tire mileage, and lower maintenance cost.

For further information write to Ferree Motor & Equipment Co., 2451 Randleman Road, Greensboro, N. C., or use the Request Card at page 18. Circle No. 23.

Versatile material cart

■ Low-cost material handling with the "3-in-1" Moto-Bug is described in an eight-page catalog from the Kwik-Mix Co., Port Washington, Wis. Illustrations show how the three easily interchanged attachments—a hopper, a platform, and a fork-lift—for one standard chassis permit the Moto-Bug to load, lift, or haul all types of materials.

Both the Model S-10 three-wheel unit and the larger Model R-15 four-wheel unit are shown in photographs illustrating the many applications of the machine on construction projects.

To obtain this information write to the company, or use the Request Card at page 18. Circle No. 62.

Catalog on bridge grating

■ Borden grating for bridge decks is described in a bulletin from Borden Metal Products Co., 841 Green Lane, Elizabeth, N. J.

Two types of roadway grating and two types of sidewalk slab are pictured and described complete with specifications. Load tables for the four types are included, and installation instructions are given. Borden standard package beam bridges also are pictured and described.

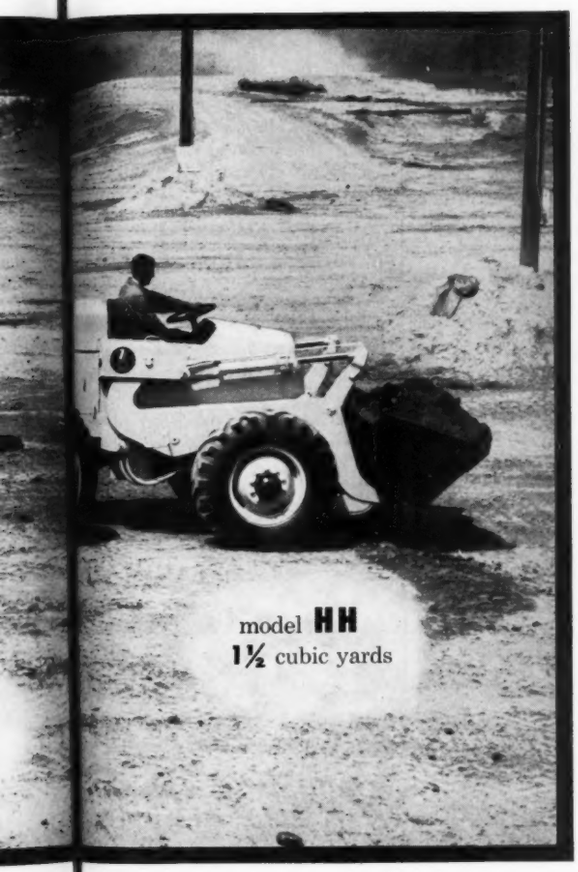
To obtain this bulletin write to the company, or use the Request Card at page 18. Circle No. 72.

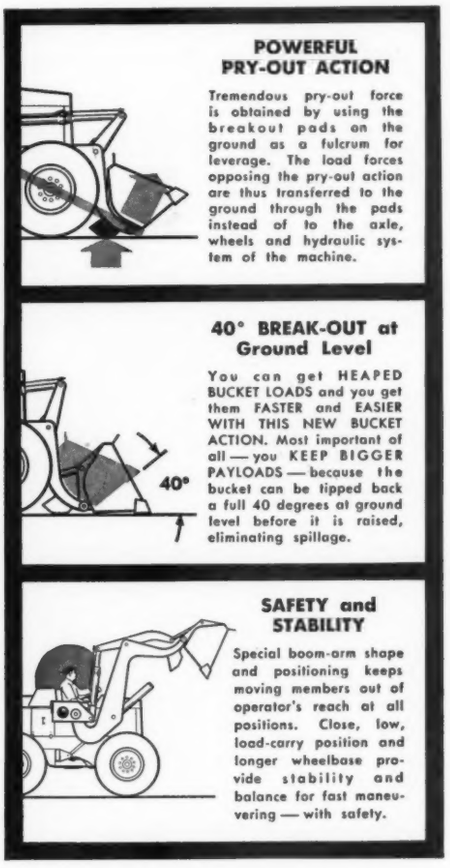
Multipurpose excavator

■ "Construction and Maintenance of Irrigation and Drainage Systems" is the title of an illustrated folder released by the Gradall Division of the Warner Swasey Co., 5701 Carnegie Ave., Cleveland, Ohio.

Approximately 30 photographs show the Gradall machine pouring concrete, laying pipe, trenching, etc.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 95.




POWERFUL PRY-OUT ACTION
Tremendous pry-out force is obtained by using the breakout pads on the ground as a fulcrum for leverage. The load forces opposing the pry-out action are thus transferred to the ground through the pads instead of to the axle, wheels and hydraulic system of the machine.
40° BREAK-OUT at Ground Level
You can get HEAPED BUCKET LOADS and you get them FASTER and EASIER WITH THIS NEW BUCKET ACTION. Most important of all — you KEEP BIGGER PAYLOADS — because the bucket can be tipped back a full 40 degrees at ground level before it is raised, eliminating spillage.
40°
SAFETY and STABILITY
Special boom-arm shape and positioning keeps moving members out of operator's reach at all positions. Close, low, load-carry position and longer wheelbase provide stability and balance for fast maneuvering — with safety.

in Four-Wheel Drive

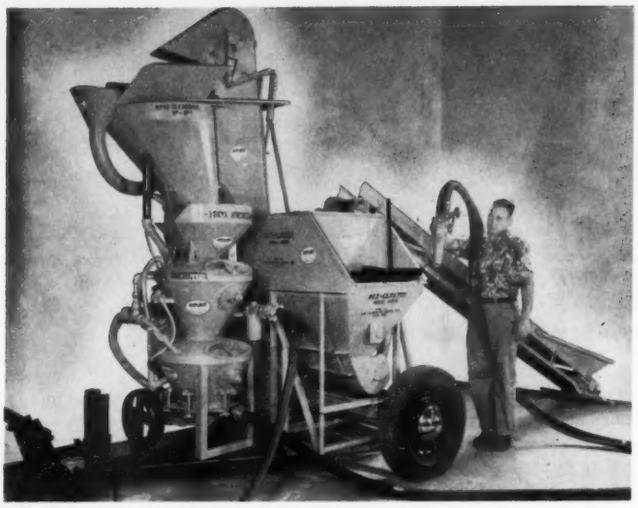
our Hough Distributor's continues to be the place
o get the most performance and satisfaction for
our tractor-shovel dollar. For he sells the
'AYLOADER" line of wheeled tractor-shovels —
e pioneer line and the most-proven, most complete
e available. He has a "PAYLOADER" size to
eet your requirements, whether for four-wheel-
ive, rear-wheel-drive or front-wheel-drive types
-along with the finest parts and service facilities
protect your tractor-shovel investment.

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
762 Sunnyside Ave. Libertyville, Illinois

Send full information on new "PAYLOADER" Tractor-Shovels
☐ Model HU ☐ Model HH ☐ Model HO
Name .....
Title .....
Company .....
Street .....
City .....
State .....

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 219



Concrete-gunning rig in improved model

■ A new portable concrete-gunning rig incorporating design features said to increase its application, capacity, and flexibility is announced by the Air Placement Equipment Co.

The rig is made up of three basic pieces of equipment: the Nucretor concrete gun; the Mix Elvator automatic proportioning, dry-mixing, and elevating machine; and a new labor-saving sand loader. The sand loader operates from a power takeoff from the drive mechanism of the Mix Elvator.

The Nucretor has greater capacity (2 to 7 cubic yards per hour) than was previously obtainable, and it is equipped with the Airplaco gunning nozzle. This new nozzle has been designed to provide more efficient gunning of concrete and other cementitious materials.

The equipment is designed so that the entire unit may be hitched to either the air compressor or, if the compressor is mounted on a truck, to the trailer hitch of the truck. According to the manufacturer, the rig is ideally suited for all types of concrete-gunning work, and especially for jobs where it is necessary to move the equipment from one site to another with as little downtime as possible.

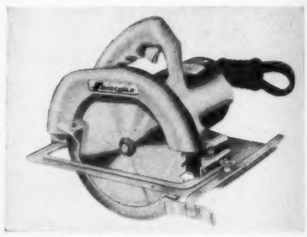
For further information write to Air Placement Equipment Co., 1009 W. 24th St., Kansas City, Mo., or use the Request Card at page 18. Circle No. 90.

Air Placement Equipment Co.'s newly redesigned concrete-gunning rig.

Versatile electric saw in rugged cutting tool

■ The newest addition to the Fairchild Industries line of power tools is a 10-pound 7-inch-diameter electric saw said to combine versatility with rugged power features.

Operated from a hand-formed grip with trigger switch, the new saw cuts



a rough 2×4 as deep as 2 1/32 inches at a 45-degree angle and 2 5/16 inches straight down.

A thumb grip for vertical work, low grip for extended work, and convenient rear-mounted depth and angular adjustment (minimum cut depth is 1/16 inch) are outstanding features. The new saw is powered by a Fairchild ¾-hp 115-volt ac-dc motor rated at 8 amp. Blade rpm is 5,000 without load.

For further information write to Fairchild Industries, 252 College St., Burlington, Vt., or use the Request Card at page 18. Circle No. 189.

Harnischfeger appoints

The Harnischfeger Corp., Milwaukee, Wis., has appointed eight new district managers for its construction and mining division. Philip C. Petry will cover Boston, Mass.; Raymond M. Calkins, Birmingham, Ala.; Alfred E. Hoehler, Pittsburgh, Pa.; Andrew B. Conner, Detroit, Mich.; Gordon E. Leopold, Minneapolis, Minn.; Herman E. Sutter, Kansas City, Mo.; and Jack G. Walker, Dallas, Texas. Richard B. Maxson has been named sales engineer in the Buffalo, N. Y. office.

get set for more work with lower equipment investment

HOPTO

DIGGER • SHOVEL • CRANE

FAST CYCLING . . . HYDRAULICALLY OPERATED . . . EASILY MASTERED!

HOPTO Model 200 DTM illustrated above mounts on any 1½ ton or larger truck. This low-cost, big-capacity, versatile unit gives you a power shovel, crane and backhoe at *low equipment investment!*
HOPTO is completely hydraulic. Four levers give fatigue-free operation of this fast-cycling, 200° swing unit. The dipper stick extension mounting on the bucket gives 135° tilt. HOPTO digs 11½ feet below surface; lifts 13½ feet high with shovel bucket, more than 9 feet high with backhoe.
Alloyed steel hardened pins and self-aligning bearings at all pivot points, magnetically filtered oil, double wire braided hydraulic hoses and the elimination of all cables, sheaves and pulleys assure longer life, lower maintenance!

MODELS FOR EVERY NEED!

Badger manufactures a complete line of earth digging equipment from the large capacity, continuous Badger Trencher to the following models of the HOPTO Digger: Power take-off operated and self-powered trailer-type models, two models for mounting directly on any 1½ ton or larger truck, models for rear mounting on track-type of wheel-type tractors, a complete self-propelled track-type unit and the complete Model SPR unit shown below. All HOPTO units incorporate the completely hydraulic operation and the heavy-duty engineered features that make HOPTO the standard of comparison!
A wide variety of attaching equipment adapts HOPTO for any shovel or backhoe work. Half shell and skeleton type buckets and backhoes are available in a variety of widths for every application. Buckets are equipped with HL teeth.
Get all the facts and you'll get HOPTO!

BADGER MACHINE CO.

DEPT. E, WINONA, MINN.

WRITE FOR FREE FOLDER GIVING COMPLETE INFORMATION

For more facts, use Reader-Reply Card opposite page 18 and circle No. 220

The Skidmore-Wilhelm impact wrench calibrator speeds bolted construction.

Impact wrench calibrator for bolted construction

■ A new impact wrench calibrator designed especially for use in tightening high-tensile bolts in steel structural work is announced by Skidmore-Wilhelm Co., 442 S. Green Road, Cleveland 21, Ohio.

Said to be highly accurate, the new hydraulic device calibrates wrenches for ¾, ⅞, or 1-inch-diameter bolts of 2½ inches or more in length. A specially marked gage shows direct bolt tension, with recommended values for each size bolt clearly indicated.

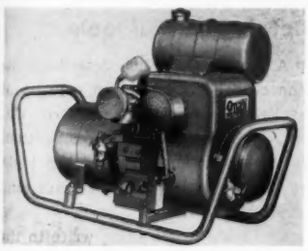
This completely self-contained unit measures 12×14×5 inches, and weighs only 50 pounds.

For further information write to the company, or use the Request Card at page 18. Circle No. 105.

New addition to line of electric plants

■ A new model in its Series AK line of portable electric generating plants is announced by D. W. Onan & Sons Inc.

This lightweight 1,500-watt, 60-cycle, ac electric plant is offered in two versions. The 105AK-1P, weighing 125 pounds, is equipped with tubular aluminum carrying frame as



standard equipment. The 105AK-1M, weighing 130 pounds, is designed for stationary service, but a carrying frame and two-wheel dolly are optional equipment.

Both plants are powered by a single-cylinder engine featuring extra-large, long-life bearings; rotating Stellite-faced exhaust valve; solid Stellite exhaust insert; built-in governor; and high-tension, radio-shielded magneto ignition. The unit will run for about 3 hours on one gallon of gasoline at full rated load.

For further information write to D. W. Onan & Sons, Inc., University Ave. S. E., Minneapolis 14, Minn., or use the Request Card at page 18. Circle No. 20.

New tire cross chains are easily installed

■ A rubber-cushioned tire chain featuring snap-on, snap-off cross chains has been announced by The Thomas Co., 1645 Hennepin Ave., Minneapolis 7, Minn. Called the Ruggo tire chain, the double-traction triple-wearing equipment fits any heavy-duty vehicle.

A special feature is the exclusive rubber roller assembly, which provides a cushion for the chain, prevents damage to the tire, and holds the cross chain on the hook. Resiliency of the rubber roller permits easy removal of the cross chain, even when on the tire.

According to the manufacturer, only seconds are needed to install or

remove the cross chains. Because the rubber roller feature allows them to turn freely on the tire, the cross chains are said to wear evenly on both sides for double the traction and triple the wear of ordinary cross chains.

The cross chains snap on and off without tools, alternately turn, then dig in for more traction, and turn automatically for more mileage with less breakage. They are recommended for use on trucks, graders, tractors, snowplows, and other heavy-duty construction or maintenance equipment.

For further information write to the company, or use the Request Card at page 18. Circle No. 19.

American Tractor officer

John D. Grayson has been named vice president and treasurer of American Tractor Corp., Churubusco, Ind., maker of TerraTrac crawler tractors. This is a new post created in the firm's expansion program.

The New UNIT Model 510 Challenger ...as a Trenchoe

DESIGNED with a BACKGROUND of ⅜ YARD EXPERIENCE

Evidence of highest quality engineering and construction includes alloy steels and forgings • anti-friction bearings • modern transmission design with involute splines to add strength and reduce wear • straight-in-line engine mounting with torque converter • trunnion supported tapered drums to eliminate bending stress on drive shafts • easily accessible hydraulic clutches • minimum number of main machinery gears enclosed in one-piece cast gear case • force feed lubrication • self-aligning replaceable hook shoes distribute applied pressure over maximum area • interchangeability of parts simplifies maintenance, cuts costs. All these UNIT advantages mean more profitable operations for you.

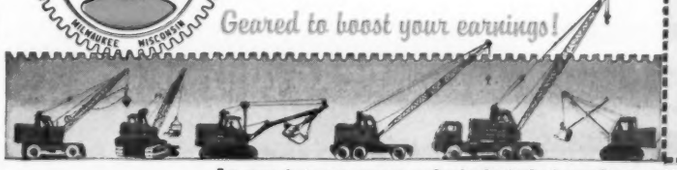
Why it's BEST to INVEST in modern UNIT models

Because each feature has been proven to contribute substantially to the Life, Performance and Efficiency which have made present and previous UNIT products readily acceptable.

Send for Bulletin Now... Use Coupon!

UNIT CRANE & SHOVEL CORP.
6309 W. Burnham St. • Milwaukee 14, Wis., U.S.A.

Geared to boost your earnings!



UNIT CRANE & SHOVEL CORP.
Milwaukee 14, Wisconsin

Please send me your new Bulletin on the UNIT CHALLENGER Model 510.

Name.....
Address.....
City.....
State.....

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 221

A 8236-1PCR

The Link-Belt Model HC-98 Zephyrcrane has a 30-ton capacity.

Hydraulic control results in increased output for line of truck cranes rated at 12½ to 35 tons

■ Five new truck-crane models, with lifting capacities ranging from 12½ to 35 tons, are offered by Link-Belt Speeder Corp. All five feature Speed-O-Matic hydraulic control, which the company claims increases output up to 25 per cent by reducing operator fatigue.

In addition to the ease-of-operation feature, the new models—called Zephyrcranes—are said to deliver ample net horsepower or actual line pull for all operations. This greater net horsepower, plus more live weight, is reported to allow the machines to handle more work in less time, with lower over-all cost for maintenance and service.

The Models HC-58 and HC-68, with 12½ and 17½-ton capacity, respectively, at 10-foot radius, are designed for fast and easy transportability and all-purpose lifting and digging. Both are fully convertible, and are said to meet highway weight regulations in most localities. "Remote" control, an optional extra on the HC-68, permits greater on-the-job maneuverability; the operator can control both travel and steer from the cab of the crane. These two models are said to be ideal for applications where digging tasks are interspersed with lifting jobs.

The Models HC-88, HC-98, and HC-108, 25, 30 and 35-ton capacity, respectively, at 10-foot radius, offer greater lifting capacity plus the advantages of working at greater radii by being able to use long booms and jibs. This feature reduces the necessity for jockeying the machine about the job. Though these three models are primarily recommended for lifting-crane service, they are designed for easy convertibility to other front-end attachments. All three machines are available with a third drum for pile-driving operations.

The five new models feature power raising and lowering of the boom by means of hydraulically actuated clutches, and a retractable high gantry. All are mounted on specially designed carriers with full-floating walking-beam rear-axle supports that allow travel over uneven terrain.

For further information write to Link-Belt-Speeder Corp., 307 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 51.

Catalog on drill tools

■ A 40-page catalog describing its line of drilling tools and supplies is available from the Acker Drill Co., Inc. The booklet lists specifications for a variety of soil-sampling tools, rotary earth augers, diamond and shot-core drills, etc.

To obtain this catalog write to the Acker Drill Co., Inc., 725 W. Lackawanna Ave., Scranton 3, Pa., or use the Request Card at page 18. Circle No. 184.

Data on steel decking

■ American Steel Band Co., Pittsburgh, Pa., offers a new technical bulletin on its steel deck.

According to the literature, these ribbed steel sections are lightweight and fire-resistant, and may be adapted for roofs, sidewalks, etc.

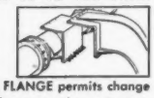
To obtain this bulletin write to American Steel Band Co., P. O. Box 565, Pittsburgh 30, Pa., or use the Request Card at page 18. Circle No. 135.

for compacting earthfills

SELECT SOUTHWEST

***Southwest* compaction roller**

5 SIZES WITH WEIGHT CAPACITY FROM 10 TO 100 TONS

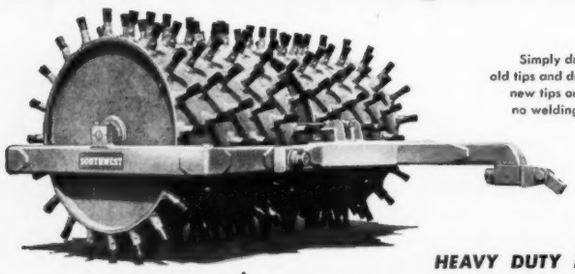


ADAPTER FLANGE permits change of draft beam to suit any tractor.

FEATURING:

1. Greater wheel oscillating freedom with each wheel mounted in an independent weight box unit.
2. Heavy duty, reinforced gooseneck and sectionalized hauling yoke.
3. Swivel hitch with Timken roller thrust bearing.
4. Each wheel equipped with two large Timken bearings.
5. Sectionalized hauling yoke permits use of 2 to 6 wheel units.

***Southwest* sheepsfoot roller**



Simply drive off the old tips and drive on the new tips on the job—no welding required.

HEAVY DUTY MODELS FEATURING:

1. Full oscillating double drums.
2. Timken roller thrust bearing at oscillating pins.
3. Two-piece foot with replaceable tips—permits changing size or replacing tip in the field without welding.
4. One-inch steel drum shell.
5. Heavy duty, reinforced box steel frame.
6. Large swivel hitch with Timken roller thrust bearing.

11 SIZES WITH WEIGHT CAPACITIES FROM 5 TO 20 TONS

WRITE TODAY for illustrated folders giving complete data and specifications.

Southwest Welding & MANUFACTURING CO.

CONSTRUCTION MACHINERY DIVISION

ALHAMBRA, CALIFORNIA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 222

Euclid TC-12

TWIN CRAWLER

COMPLETELY NEW
...in design and performance

2 ENGINES...with Separate Torqmatic Drives...total of 388 horsepower

Euclid, a pioneer in the development of specialized equipment for moving large tonnages in off-the-highway service, announces the TC-12 . . . the first really new crawler tractor in years. It's a new concept of tractor work-ability . . . smooth performance . . . unequalled power . . . ease of operation and maintenance.

Features that give the "EUC" TC-12

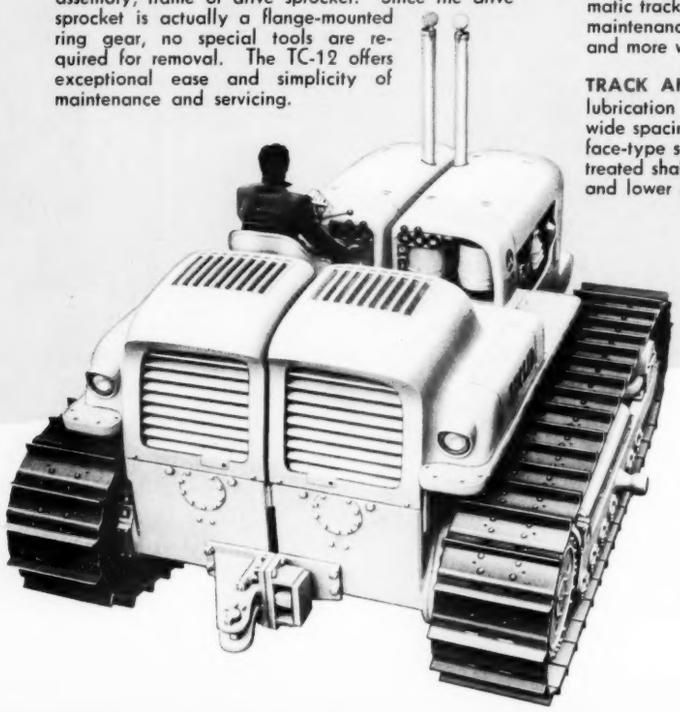
Here, for the first time, is a completely new tractor that's designed and built to provide all the features you want in a crawler tractor. It is years ahead of the field in ability to get more work done—faster—because it's unequalled for power, smooth operation, speed and maneuverability.

Powered by two 194 h.p. diesels with separate Torqmatic Drives for each track, the TC-12 provides a smooth, steady flow of power to meet job requirements. Unique design permits track oscillation for maximum traction on rough, uneven ground. Three speed ranges—both forward and reverse—give any speed up to 8.3 m.p.h.

ACCESSIBILITY for servicing of all major components is unequalled in any other crawler. Unitized assemblies are all easy to get at . . . they can be disconnected, serviced or removed without tearing down other parts. All lubrication fittings, check points, etc., are located for maximum convenience. Fuel tanks have ample capacity for full shift operation.

EASE OF OPERATION is a feature of the TC-12's modern design. The operator has ample room for maximum comfort and unusually good visibility at all times. Torqmatic Drive and independently powered tracks make the tractor easy to operate . . . there's no clutch or manual shifting of gears.

PLANETARY DRIVE is of the same design that has been performance proved in thousands of "Eucs." It can be serviced or replaced without removing the track assembly, frame or drive sprocket. Since the drive sprocket is actually a flange-mounted ring gear, no special tools are required for removal. The TC-12 offers exceptional ease and simplicity of maintenance and servicing.



TRACK OSCILLATION—Twin-Power design, with each half of the tractor separate and connected by only one big transverse shaft, gives the TC-12 maximum stability and traction on rough ground. Each half of the tractor, not just the tracks, can move up or down to maintain better ground contact. Where size or weight restrictions for shipping require, the tractor can be separated into two halves in a very short time.

HYDRAULIC TRACK TENSION—Maintaining proper track tension, a difficult and costly problem with other crawlers, is automatic on the TC-12. Euclid's track tensioning system consists of a hydraulic jack that maintains uniform pressure on the front idler. An accumulator absorbs recoil caused by stones, etc., passing between the drive sprocket and track. Automatic track tension is a feature that pays off in lower maintenance and longer track life . . . less downtime and more work time.

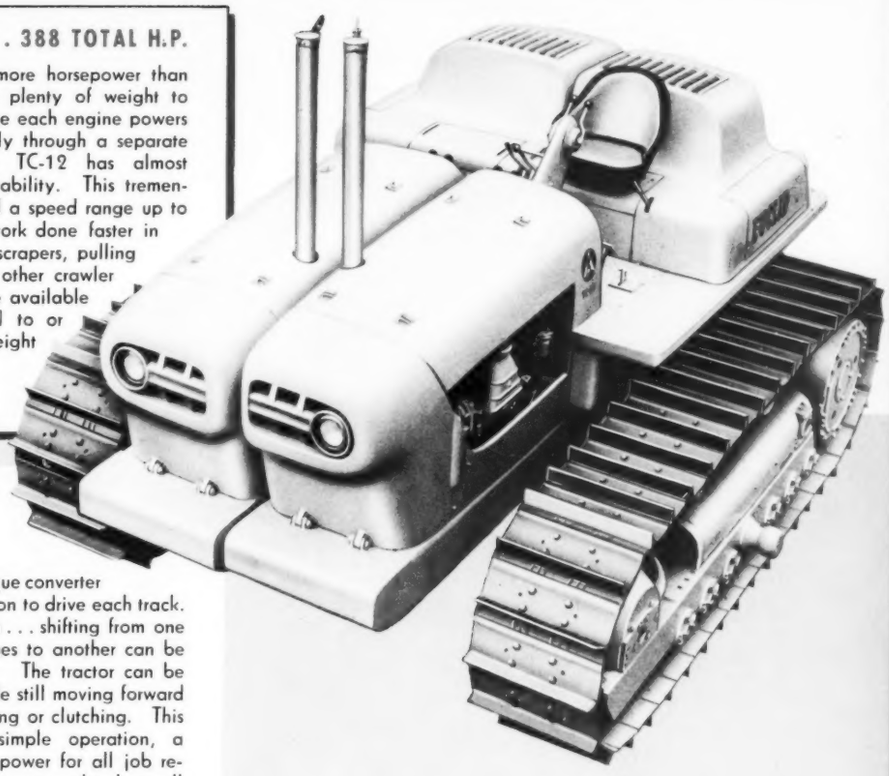
TRACK AND CARRIER ROLLERS have 1000 hour lubrication . . . heavy duty barrel type bearings with wide spacing for maximum support and self adjusting face-type seals to exclude water and dirt . . . heat treated shaft and rollers are integral unit for long life and lower maintenance.

COOLING SYSTEM problems that are common to other tractors are eliminated in the TC-12 due to the rear location of the radiators where there is no obstruction for an ample flow of clean air. More efficient engine operating temperatures can be maintained . . . and with the hinged radiator hoods, replacement of a fan belt is a simple matter, not a major disassembly job.

MORE WORK-ABILITY THAN ANY OTHER CRAWLER

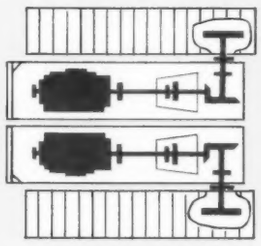
TWIN ENGINES . . . 388 TOTAL H.P.

The TC-12 has much more horsepower than any other tractor and plenty of weight to utilize this power. Since each engine powers one track independently through a separate Torqmatic Drive, the TC-12 has almost unbelievable maneuverability. This tremendous usable power and a speed range up to 8.3 m.p.h. gets more work done faster in dozing, push loading scrapers, pulling cable scrapers or any other crawler drawn equipment. The available drawbar pull is equal to or greater than the gross weight of the tractor and attachments.



TORQMATIC DRIVES

Back of each 194 h.p. engine is an Allison torque converter and torqmatic transmission to drive each track. There is no master clutch . . . shifting from one of the three speed ranges to another can be done under full power. The tractor can be shifted into reverse while still moving forward . . . no delay for stopping or clutching. This power train provides simple operation, a smooth steady flow of power for all job requirements, and develops greater drawbar pull at faster ground speed . . . all important for work with rubber-tired motor scrapers.



Twin-Power—using two engines with separate Torqmatic Drives

INDEPENDENT TRACK DRIVES

With a separate power train for each track, the TC-12 has faster and easier steering with greater flexibility than any previous tractor design. Steering is accomplished by putting either one of the transmissions in neutral and using the track steering brake. Tight pivots can be made by reversing one transmission and keeping the other one in forward speed. Operator has "hair trigger" control of steering at all times in any of the three speed ranges, forward or reverse.

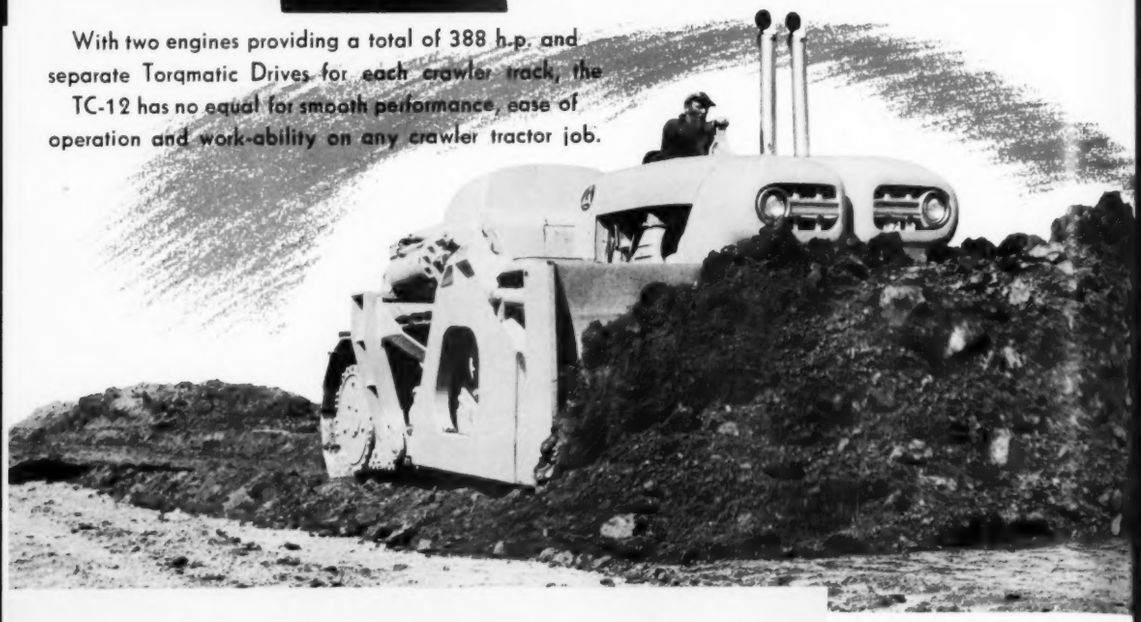
SPECIFICATIONS

Total h.p.—388 h.p. at rated speed.
Speeds — 3 speed ranges, forward and reverse to 8.3 m.p.h.
Drawbar pull (bare tractor)—forward and reverse 54,000 lbs. low range
53,500 lbs. intermediate
53,000 lbs. high
Track width (standard shoe) . . . 26"

Track gauge . . . . . 110"
Overall width . . . . . 11' 4"
Overall length . . . . . 16' 2"
Height (excluding stacks) . . . 7' 11"
Drawbar height . . . . . 23"
Ground clearance . . . . . 20"
Operating weight (bare) . . . . . approx. 58,000 lbs.

The "EUC" TC-12 ...a new concept in Speed and Power!

With two engines providing a total of 388 h.p. and separate Torqmatic Drives for each crawler track, the TC-12 has no equal for smooth performance, ease of operation and work-ability on any crawler tractor job.



For push loading big equipment, the smooth flow of tremendous power maintains steady production.

Scrapers are loaded in a higher gear with the TC-12 because of Torqmatic Drive that matches any speed.

Rear mounted radiators maintain efficient engine operating temperatures.

GM GENERAL MOTORS EUCLID

EUCLID DIVISION

GENERAL MOTORS CORPORATION

Cleveland 17, Ohio

Printed in U. S. A. — Form No. 601-R

The Anthony Teleramic frameless dump body.

Frameless dump trailer permits greater payloads

■ A new "frameless" dump trailer whose design permits additional legal payloads of up to 2,000 pounds is announced by the Anthony Co., Streator, Ill. Elimination of the conventional trailer frame and the use of only one front-mounted head-lift telescopic cylinder are said to make this additional capacity possible.

The Anthony Teleramic frameless dump body is literally a dump body on wheels. When a load is to be dumped, the entire front end of the trailer is lifted by a single hydraulic telescopic cylinder mounted on the tractor's fifth wheel coupling. During the raising or lowering operation, the trailer body pivots around the rear wheels, while tubular stabilizer arms pinned to the hoist fifth wheel and the trailer body give added support for a variety of loads and working conditions.

The location of the hoist mechanism over the tractor's driving wheels is said to give excellent traction for spreading operations.

For further information write to the company, or use the Request Card at page 18. Circle No. 102.

Data on hopper scales

■ The Webb Corp., Webb City, Mo., has published a folder on its line of suspension hopper scales for use in mixing, proportioning, or batching. The scales are described and illustrated as components of concrete-mixing and aggregate plants.

Webb scales, available in capacities of from 500 to 100,000 pounds, are of all-steel construction, featuring hardened steel pivots and bearings (self-aligning). They can be equipped with dial indicators or with weigh beams as desired.

To obtain this folder write to the company, or use the Request Card at page 18. Circle No. 199.

Union Wire Rope assigns new sales representative

Harold Molloy has been appointed sales representative of the Union Wire Rope Corp., Kansas City, Mo., and will cover the state of Ohio. He will make his headquarters in Cleveland.

New underwater locator aids in dredging work

■ An underwater metal locator, recommended for contractors' use in determining the path of cables, pipelines, and other marine installations prior to excavation or dredging operations, is marketed by Bludworth Marine, a subsidiary of General Precision Equipment Corp., 92 Gold St., New York 38, N. Y.

The Model UML-2 locator uses a metal pointer which deflects in the presence of ferrous or nonmagnetic metals. A supersensitive amplifier with batteries is enclosed in a watertight non-corrosive housing attached to the detector unit. The detecting meter on the housing provides direct, accurate readings for rapid location of buried cables or pipes, according the manufacturer.

The Bludworth Marine underwater metal locator.

Under water, the Bludworth Marine locator is almost buoyant—weighing only a pound and a half when submerged.

For further information write to the company, or use the Request Card at page 18. Circle No. 6.

How to wash your face with Jaeger pumps

TO SCOUR THE FACE OF THE TAILRACE CUT for Virginia Electric and Power Company's power station dam at Roanoke Rapids, N. C., Stone & Webster used this ingenious set-up. Two Jaeger pumps (a self-priming 6P and high pressure 5CPH, connected in tandem) traveled in dump truck. Jets with 15/16" nozzles were handled from platforms on crawler-mounted crane. Moving along the cut, they knocked all loose rock and earth from the face with two powerful streams each shooting 370 gpm at 170 lbs. pressure. This method was also used to scour the rock before pouring wings of the dam.

EMERGENCY FIRE PROTECTION: Stone & Webster set up other Jaeger 5CPH pumps like this for standby protection against fires. Their capacity and pressure exceeds that of standard 500 gallon "pumpers".

SURE-PRIME AND HIGH PRESSURE TEAM TOGETHER: Jaeger 6P, which maintained prime automatically, was connected in tandem to a Jaeger 5CPH which boosted water pressure to 170 psi. Pumps were set up in dump truck for easy moving along job.

GENERAL VIEW OF CONSTRUCTION, Roanoke Rapids Power Station of Virginia Electric and Power Co., built by Stone & Webster Engineering Corp. Eleven Jaeger pumps were used on this job.

For full information on Jaeger dewatering and pressure pumps, see your Jaeger distributor or send for catalog P-4.

THE JAEGER MACHINE COMPANY

701 Dublin Avenue, Columbus 16, Ohio

COMPRESSORS • LOADERS • TRUCK MIXERS • CONCRETE MIXERS • PAVING MACHINES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 224

The Holmes-Owen truck loader now features a forward-tipping ½-yard bucket.

Forward-tip bucket for truck loader

■ A new forward-tipping bucket that permits the Holmes-Owen truck loader to be used as a loading unit for other trucks is announced by the Ernest Holmes Co. The new design is said to improve digging and shoveling operations when the unit is used for self-loading, and to permit the equipment to be used for loading other vehicles.

The new-type bucket is hydraulically operated by controls located inside the cab, on the steering column. The bucket is constructed with a pivot at each end near the bucket's center of gravity. These pivots are mounted in bearings at the end of each arm, thus allowing the bucket to rotate.

The bucket is powered by two double-acting cylinders mounted on the top side of each bucket arm, with the piston rods connected to bell cranks mounted on the bucket operating shaft. Because the bucket may be rotated to any position up to 120 degrees, the operator can lower the digging edge of the bucket for a better bite into the material, or may rotate the bucket for better filling before dumping.

The unit has the capacity to lift ½ yard of material per bucket, loading the average truck in approximately four minutes. It may be installed on most 1½ or 2-ton trucks with standard-type dump bodies.

For further information write to the Ernest Holmes Co., Chattanooga, Tenn., or use the Request Card at page 18. Circle No. 37.

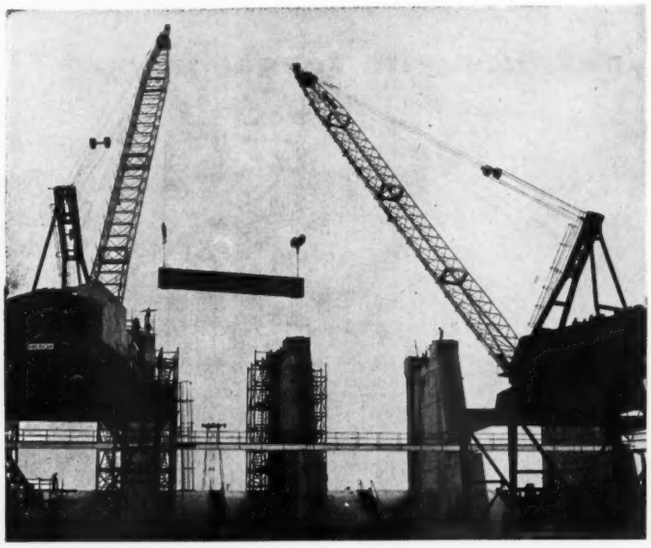
Diesel engine boosts hp without increase in size

■ Development of a new turbocharged diesel engine representing a gain from 170 to 205 horsepower without increase in engine size or weight, or loss of fuel economy, has been announced by Mack Trucks, Inc. In fact, the company reports, tests have proved that fuel economy is even better with the turbocharged engine than with the naturally-aspirated type on the basis of pounds of fuel per brake-horsepower-hour.

The power increase in this new model is effected by use of an exhaust-driven turbocharger in conjunction with the Mack Thermodyne diesel engine. The engine starts as readily as the naturally-aspirated version, since it maintains the same compression ratio.

The turbocharger has but a single moving part—the turbine wheel and air impeller—attached to a single short shaft. For maximum efficiency, the unit is mounted directly on the exhaust manifold so that the travel of the exhaust from the engine is as short as possible.

For further information write to Mack Trucks, Inc., 350 Fifth Ave., New York, N. Y., or use the Request Card that is bound in at page 18. Circle No. 29.



A 35-TON precast and prestressed girder being lowered into place in the north row of girders for the spillway bridge.

Unique Vibrator Mounting Enables Spillway Contractor to Vibrate Portion of Girder Impossible to Reach Internally

• **Contractor's ingenuity** has been an important factor in precasting and prestressing operations of the 32-span bridge of massive Garrison Dam which cuts off the Missouri River channel at Riverdale, North Dakota. Precasting and prestressing, although only a small part of the $13,300,000 stage I spillway contract, presented unexpected problems in placing the concrete.

• **The huge concrete slab** of the spillway chute was used as a casting bed for precasting and prestressing by the contractors on the project, Johnson, Drake & Piper, Inc.; C. F. Lytle Company; Foley Brothers, Inc.; Winston Brothers Company, and Donovan Construction Company. Among the many members cast on the job, were 64 girders, 47.33 feet long and 6 feet high. Viber Model PX high speed pneumatic external vibrators were used underneath on the first ten to twelve inches of concrete. It was impossible to reach this concrete with internal vibration due to the seven cables that fill the seven inch web.

• **A novel rig** for mounting external vibrators was so portable that the contractor was able to place this concrete with two VIBER Model PX external vibrators. As concrete was placed, the jack and vibrators were rolled under the girder form between timber supports. Raising the jack forced the vibrator to bear against the form, vibrating the mix. Through use of this rig, the vibrator could be quickly shifted to another position against the form or rolled to the next pour.

• **For further information** on Viber's complete line of internal and external vibrators, contact your authorized distributor or Viber Company, Dept. 77, 726 South Flower Street, Burbank, California.

A WORKMAN opens the valve to start a VIBER pneumatic vibrator held against the lower flange of a girder form by a Blackhawk floor jack. This external rig can be quickly moved to another location.

VIBER

CONCRETE VIBRATORS SINCE 1931

For more facts, use Reader-Reply Card opposite page 18 and circle No. 225

TRIPLE STRENGTH

makes FULTEX toughest tarps of all

"WORLD'S TOUGHEST DUCK"

Talk about tough! Fultex Tarps are made of super-durable cotton duck treated by Fulton's exclusive "long life" process. Seams are triple sewed with heavy duty, rot-proofed thread . . . and grommets are triple reinforced. The result is *triple strength* . . . extra protection for your men and materials. *And all at no extra cost to you!* For greater safety, greater savings, put Fultex Tarps to work for you!

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Cure Concrete *a Full Week Faster* with FULCO Concrete Curing Mats

They cure faster, last longer—more than pay for themselves! Write for full details.

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 226

The Pinazza rock-drilling and demolition set, which uses a centrifugally-activated hammer, is recommended for quick, economical driving of form pins.

Versatile air hammer needs no compressor

■ Faster and more economical driving of form pins on highway paving projects is one of the many applications recommended for rock-drilling and demolition equipment now being marketed by Pitnam Industrial Products Co., Inc.

Utilizing a centrifugally-activated hammer powered by either a gasoline engine or electric motor through a flexible shaft, the lightweight Pinazza drilling set is said to be 75 per cent more efficient than comparable pneumatic equipment. Besides its application in form-pin driving, the set can be used to relocate piping in earth or walls of building, for installing fence, for driving grounding rods, and for breaking frozen ground—not to mention standard drilling and demolition operations. Because it weighs about 90 per cent less than pneumatic equipment of equivalent capacity, it can be transported between jobs in a station wagon, jeep, or the trunk of a standard passenger car.

Pinazza hammers are available in three different types, ranging in weight from 35 to 53 pounds. Since the hammer and power unit are separate, the hammer can be used in any position, for either wet or dry drilling, for depths up to 16½ feet. Standard flexible shaft lengths are 9 to 10 feet, but shafts can be coupled to triple length without affecting operating efficiency. Standard accessories for drilling, concrete breaking, digging, demolition, tamping, etc., can be used with the hammer.

For further information write to Pitnam Industrial Products Co., Inc., 608 Fifth Ave., New York 20, N. Y., or use the Request Card at page 18. Circle No. 11.

Dust-control unit

■ Literature on its Type H liquid precipitator scrubber for use in dust control at asphalt-plant sites is available from the Johnson-March Corp.

Cutaway drawings illustrate the construction and operation of this dust-control unit, which uses six different scrubbing principles and as many points of contact between the dust and water to collect large volumes of processed dust. Various arrangements of the scrubber, available in five sizes, are explained and diagrammed.

To obtain this bulletin write to the Johnson-March Corp., 1724 Chestnut St., Philadelphia, Pa., or use the Request Card that is bound in at page 18. Circle No. 130.

Let ONE Man Lift Heavy Loads Quickly - Safely with a BRADEN Winch

BRADEN Winches are adaptable for use on trucks, tractors, cranes and other mobile equipment used to move heavy loads. They are so fool-proof in design ONE man can lift and move equipment weighing thousands of pounds.

BRADEN Winches are available up to 100,000 pound capacities so are adaptable for safely handling practically any load.

See Your Braden Dealer or Write for Complete Information

BRADEN WINCH COMPANY
P.O. Box 547, Broken Arrow, Oklahoma

BRADEN Winches

"IN SERVICE AROUND THE WORLD"

For more facts, use Reader-Reply Card opposite page 18 and circle No. 227

13 STANDARD ASPHALT PLANTS Owned by one firm...

Industrial Asphalt OF LOS ANGELES

Industrial Asphalt of Los Angeles started business in 1941 with one STANDARD Asphalt Plant. Today they are the Nation's largest commercial producer of asphaltic paving materials. Years ago they found that the best way to *guarantee* top production of top quality asphalt was with STANDARD Asphalt plants. In the last 2½ years alone they have added 6 new STANDARD plants.

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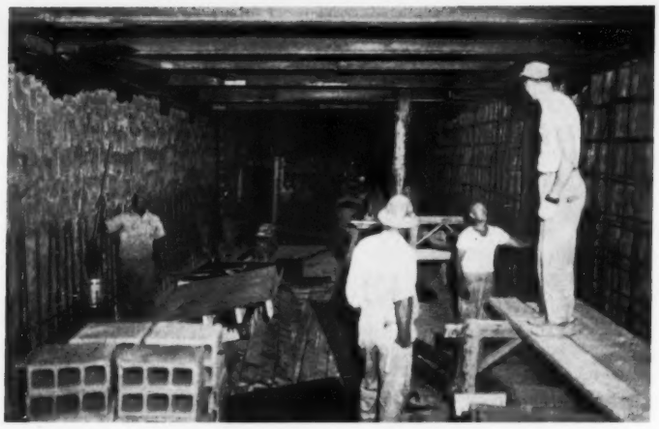

Steel beams provide temporary support for existing facilities over the proposed passageway. The blocking under the cable duct above the beams is supported by hangers from the upper decking beams, which, in turn, support street decking.
C&E Staff Photo

Utilities, traffic complicate

Driving an automobile along 42nd Street in New York City is difficult enough, but even tougher is the job of building an underground pedestrian passageway under this congested street while maintaining traffic above ground and the existing maze of subsurface utilities.

Such is the job of Slattery Contracting Co., Inc., Maspeth, Long Island, on a 225-foot-long passageway, costing $400,000, which will connect Grand Central Terminal and the new Socony-Mobil skyscraper. (See "Lightweight Steel Panels Will Sheathe Skyscraper," C&E, June, 1955, page 72.) The Slattery firm did the foundation work on the skyscraper for the Turner Construction Co., New York, N. Y., and started work on the underground passageway this summer under a second subcontract from Turner.

The tube, expected to be finished this month, will provide an egress for some of the 7,500 employees housed by the new skyscraper, permitting some of them to leave the building at the end of the work day without being caught in the swarm of homeward-bound people on the busy street.

The passageway, being built by the cut-and-cover method, starts 20 feet inside the northwest corner of the new skyscraper, bends northwest to a point just south of the 42nd Street centerline, then runs west under 42nd Street to an under-street passageway linking the Chanin Building and the Hotel Commodore. The tunnel then bends toward the Commodore, which has direct connections with Grand Central Terminal and the city subway system. Where the two passageways meet, a common connection was made to allow people to go between any of the three buildings without ever crossing Lexington Avenue or 42nd Street.

Utilities uncovered

After pneumatic pavement breakers removed the wearing surface of the street, Slattery started the job by digging a 19-foot-4-inch-wide trench 6 to 10 feet deep at the southwest corner of 42nd Street and Lexington Avenue. At this depth, the underground utilities became partially exposed. These included an elliptical brick sewer 4 feet 8 inches × 3 feet; a 30-inch water main; cable ducts of both the telephone company and Consolidated Edison Co. of New York, Inc.; concrete catch basins; and steam lines. This uncovering of the utilities was necessary to assure that they would not be damaged during the driving of soldier beams. These beams, about 26 feet long, consisted of 12-inch wide-flange 50-pound sections and 10-inch wide-flange 48-pound sections. They were driven to a minimum penetration of 6 feet below the trench subgrade by a McKiernan-Terry 9-B-3 hammer mounted on a Lorain Moto-Crane.

When the soldier beams had been spaced approximately on 8-foot cen-

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. . . 250 tons per hour of paving stone?
. . . 300 tons per hour of crusher run limestone?

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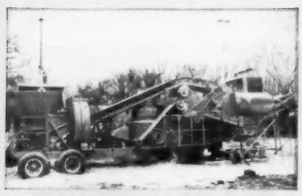
The Commander, big-volume producer of fine crushed aggregate, is the answer to profitable operation in pits with high percentages of fines. Maintenance costs are low.

Portable Primaries turn 100% of pit run material—even big boulders—into specification product. Use ahead of any make gravel plant for profitable rock crushing.

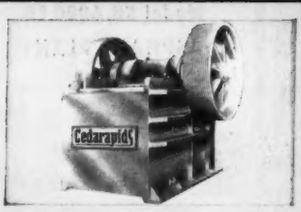


Cone Crusher Secondary combines Cedarapids portability with Symons® Cone Crusher's low-cost output of the hardest or most abrasive rock or gravel.

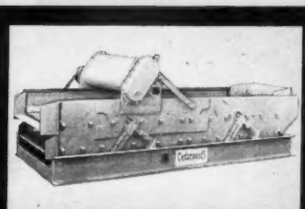
Single Pass Plants for low-cost crushing units where material does not have to be accurately graded, and for jobs where portability and fast set-up are important.

Hammermill Secondary Plant, a complete gravel crushing and screening plant, produces roadrock or aglime or a percentage of both at the same time.

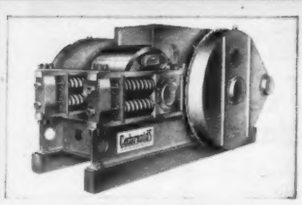
Portable Double Impeller Impact Breakers are ideal primary units for use ahead of secondary crushing plants. Use alone for high capacities of desirable cubical shaped aggregate.



Jaw Crushers—15 sizes enable Cedarapids engineers to select the right size for your job. Single jaw and twin jaw models are available.



Horizontal Vibrating Screens in a wide range of sizes in single, double and triple deck models, assure high capacities of accurately graded aggregate.



Roll Crushers, in eight sizes with three types of roll shells, insure high capacity of the smaller sized finished products you want.

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☐ Please send details of the Cedarapids equipment you recommended.

Name _____
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Company _____
Address _____
City _____ Zone ____ State _____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 229

...ork on underground passageway

Subsurface lines are maintained as cut-and-cover method is used to build facility under 42nd Street in New York City

ters along both sides of the trench, they were spanned with 14-inch wide-flange 74-pound cap beams. Decking beams, consisting of 14 to 24-inch wide-flange sections, were placed on 8-foot centers across the cap beams to support the 12×12-inch temporary street decking. This permits traffic to pass over the trench while work is in progress on the passageway.

Altogether, about 5,000 cubic yards of earth was excavated, the deepest cut going to 28 feet. Excavation was done with 1-cubic-yard swing buckets, contractor-built, which were emptied into dump trucks by a Lorain Moto-Crane. A Chicago Pneumatic 600 air compressor supplied power to the air-operated clay spades used in the trench.

As the trench got deeper, cable duct, water main, catch basins, and sewer rested on the existing fill. Then small trenches were dug under the utilities at 2 or 3-foot intervals and 12×12-inch blocking slipped underneath the utilities.

This blocking, placed on steel beams running parallel to the utilities, was hung from the decking beams with vertical steel hangers before excavation was continued under the utilities to the desired subgrade elevation.

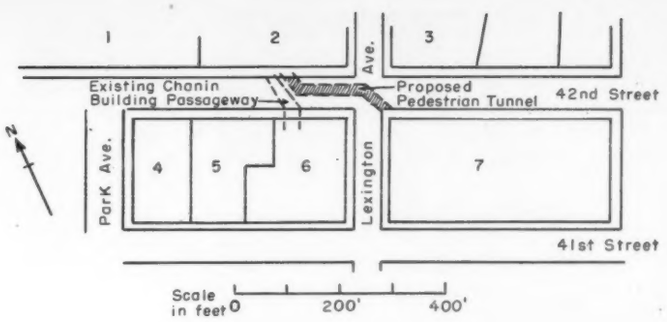
Supporting the walls of the cut were 3×10-inch timbers placed between the soldier beams and the wall for the upper 10 feet of the trench, and 4×10 or 12-inch sheeting for the lower section. The clearance between the soldier beams and the outside of the passageway walls varied because of a water main which runs along the north edge of the cut. Here a clearance of 1½ feet was required to allow the soldier beams to be driven without damaging the water main. Only a 2-inch clearance was left between the beams and the outside of the wall at the south edge of the trench, since there were no utilities here.

One of the more ticklish jobs on the project was the relocation of the 30-inch water main which lay directly in the path of the proposed passageway. In cutting out a 30-foot section of the line and looping it over the top of the proposed roof, Slattery had to be extremely careful, for a wrong move could have shorted power for the Chrysler and Chanin buildings, as well as other nearby skyscrapers. Slattery's reputation for licking rough assignments held good, however, and the water main was handled without mishap.

Passageway construction

When the subgrade had been leveled to the desired elevation, a 3-inch-thick stone concrete base for the passageway walk was placed and given a smooth surface finish. This base was topped with 5-ply waterproofing paper which was covered with a 1½-inch cement protective coating. Next a 14-inch reinforced-concrete slab was poured, the con-

(Concluded on next page)



This sketch of the 14-foot × 225-foot-long pedestrian tunnel shows how it will provide a passage between the new Socony-Mobil building (7) and the Commodore Hotel (2), which has direct access to Grand Central Terminal (1). It would also be linked with an existing tunnel from the Commodore to the Chanin Building (6). The additional buildings indicated in the sketch are the Chrysler Building (3), the Pershing Square Building (4), and the Bowery Savings Bank (5).

LOAD ROCK IN NARROW CUTS

Clearing rock from narrow cuts is just one of the numerous tough jobs which the heavy-duty Eimco 105 is particularly suited.

The Eimco 105 Tractor is a completely new conception in tractor design. Every part of this tractor is so superior to the corresponding part on conventional tractors that it must be seen and inspected to be appreciated. Here are a few of the items that you must compare: (1) The transmission — located in front for easy accessibility and containing all gearing and clutches for speed changing and reversals and steering, (2) Torque converter drive without master clutch, (3) Front position for the operator to permit full visibility, (4) Only two small handles to control all motions of the machine through the power shift transmission, (5) Two final drives to permit easy maintenance and independent operation of each track, (6) One piece cast alloy steel track rollers, (7) Heavy alloy steel construction throughout, (8) Heavy cast alloy-steel track pads and many other items all standard equipment on Eimco Tractors.

In addition to these features there are many other features of superior quality that are not outwardly visible, such as: Clutches so designed that they never need adjustment, All shafts and gearing work in anti-friction bearings of the ball or roller design, Bearings fit into individual alloy steel cages, Full pressure lubrication to all points in the transmission, Unit construction for easy service, Heavy, short shaft design, Precision heat treatment of all parts and many other superior features.

Eimco invites you to operate the 105 Tractor, see for yourself how this new design and truly modern tractor takes all the work out of operating this type of equipment, permits a man to do more efficient work all day without tiring, allows him to see what he's doing without standing up.

The Eimco Tractor has proved its superiority on hundreds of jobs. You must investigate and compare this tractor with ANY other before you buy.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Baltimore, Md. Pittsburgh, Pa. Seattle, Wash. Pasadena, Calif. Houston, Texas Vancouver, B. C. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

B-145

For more facts, use Reader-Reply Card opposite page 18 and circle No. 230

Excavation of the trench is carried on by a Lorain Moto-Crane, which brings material up in 1-cubic-yard swing buckets as it rides along temporary street decking on 42nd Street.
C&E Staff Photo

(Continued from preceding page)

crete being chuted into place from ready-mix trucks located on the street decking. Approximately 600 cubic yards of ready-mix concrete needed for the work was supplied by Transit-Mix Concrete Corp., New York, N. Y. Reinforcing steel for the walk as well as the walls consists of ⅝-inch and 1-inch rounds, spaced on 12-inch centers transversely and 6-inch centers longitudinally. The wearing surface of the walk will be a 1-inch-thick cement finish.

The walls of the passageway consist of 4-inch-thick terra cotta smooth-faced blocks on the outside, the 5-ply waterproofing paper—which when lapped over the floor's paper will provide watertight joints between the vertical and horizontal slabs—a 1½-inch cement protective coating, 14 inches of reinforced concrete, and ceramic glazed tile. Plywood forms with 2 × 6-inch backing were used to form the walls as well as the roof.

The roof slab differs in that 10-inch wide-flange 66-pound sections span the side walls and are spaced at 1-foot-6-inches. The beams were placed on the side walls by a Krane-Kar riding on the floor slab. Steel arriving at the project on trailer trucks was lowered to the Krane-Kar in the passageway by the Lorain Moto-Crane.

The 14-inch concrete roof slab, completely enclosing the beams, was covered with the 5-ply waterproofing paper to make the passageway completely watertight. Over the 5-ply paper, the 1½-inch cement protection was finished with a ½-inch screed. The heavy steel beam reinforcing, supplied by Bethlehem Steel Corp., was required in the roof construction to provide support for all the utilities as well as the street. The passageway, virtually completed, has a headroom of 8 feet 6 inches and an inside width of 13 feet 9 inches.

Concrete pedestals to support the utilities are being cast in place every few feet on the passageway roof by the same method used in pouring the walls and the walk. When this is finished, the roof and the utilities will be completely covered with backfill, the soldier beams removed by means of an ejector mounted on the Lorain crane, and the bituminous wearing surface of 42nd Street restored.

Personnel

D. Canale is the project manager for Slattery Contracting Co., Inc., and J. Baldessari the superintendent. C. R. Johnson is the project engineer for the subcontractor. The passageway is primarily for the convenience of employees in the Socony-Mobil Building, owned by the Galbreath Corp., New York, N. Y. The project manager for Turner Construction Co., New York, N. Y., the general contractor, is M. H. Parsons. Larry Gilmore is superintendent for Turner. Architects for the building and the passageway are Harrison & Abramovitz, with John B. Peterkin as an associate, all of New York, N. Y. Edward Sanel of Moran, Proctor, Mueser, & Rutledge, New York, N. Y., supervised the contract.

THE END

Panel form design

■ A handbook of panel designs for forms used in concrete-wall construction is offered by the Richmond Screw Anchor Co. The manual describes with both photographs and drawings the use of Richmond Snap-Tys, Ty-holders, Ty-Wedges, and other form hardware in various types of panel-form construction. Fabrication and installation details and specifications are given, making the booklet a simple how-to-do-it manual.

To obtain this handbook write to Richmond Screw Anchor Co., Inc., 816 Liberty Ave., Brooklyn 8, N. Y., or use the Request Card at page 18. Circle No. 74.

Construction progress continues on the Lake Ponchartrain Causeway, three of four Model 124 Wiley Floating Cranes owned and operated by the Louisiana Bridge Co., are illustrated, serving this construction program.

For dependable Floating Equipment, discuss your requirements with Wiley Engineers.

WILEY MANUFACTURING COMPANY

BARIUM STEEL CORPORATION SUBSIDIARY

P.O. BOX 97, PORT DEPOSIT, MARYLAND PHONE: PORT DEPOSIT DRAKE 5-2111

For more facts, use Reader-Reply Card opposite page 18 and circle No. 231

Gas-driven arc welders with 200-amp capacity

■ Two new engine-driven arc welders designed for field production and maintenance welding applications have been announced by Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.

Designated Models GEA200 and GEA200L, these units are suited for all welding applications where ac or ac-dc electrodes of 1/16 to 3/16-inch-diameter are required.

Rated welding current is 200-amp, 100-cycle, single-phase, with a 100 per cent duty cycle. Welding current range is 15 to 200 amp. Open circuit voltage is 85 volts. The welding arc is reported to be exceptionally stable due to the high frequency of the welding current.

In addition to welding power, both models provide 1 kw 110-volt dc auxiliary power. The Model GEA200L also can be used to supply 4.5 kw, 110 to 220-volt, 60-cycle single-phase ac power, identical to that supplied by normal power service lines.

The new machines are equipped with Onan air-cooled 10-hp gasoline engines. A feature of these engines is their aluminum alloy construction, which is said to provide light weight, strength, and rapid heat dissipation.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 194.

Simplified pipe bending with heavy-duty tool

■ Cold bending of up to 8-inch-diameter pipe in a single operation which does not require moving the pipe is the advantage claimed for a tool manufactured by Tal Bender, Inc.

One Shot benders, available in sizes to handle pipe or tubing from ⅜ inch to 8 inches in diameter, are said to represent an improvement over other pipe benders in that the One Shot models have long rams, half-circle shoes, and bend indicators. According to the manufacturer, these features permit bending pipe to a 90 or 180-degree angle in a single operation, whereas short rams and shoes require that the pipe be moved in order to obtain these bends.

The Tal Bender One-Shot tool makes a 90-degree bend in a length of pipe in one simple operation.

Advantages claimed for pipe bending over the more common method of fitting (i. e., cutting, threading, and installing elbows and fittings) are that labor and material costs are cut, fitting time is saved, weakening the pipe through threading is eliminated, and the flow of material through the pipe is uninterrupted by fittings. This manufacturer claims that pipe bending with its One Shot tool adds to these advantages the saving in time and labor that is possible through a single-operation bend.

For further information write to Tal Bender, Inc., 417 N. Water St., Milwaukee 2, Wis., or use the Request Card that is bound in at page 18. Circle No. 125.

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NOVO Diaphragm Pumps ARE available For IMMEDIATE DELIVERY

Same low cost • Better Quality

Now under new management, and offering to NOVO's many thousands of satisfied customers and dealers, a more complete and guaranteed service program. Dealerships available in some areas. Get the facts . . . write today for full details.

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NOVO PUMP AND ENGINE CO.

702 Porter Street Lansing, Michigan

For more facts, circle No. 232

Note the stringers of Stoody 21 which act as "buffers" between abrasive earth and bucket sides. Inside surfaces of bucket receive similar protection.

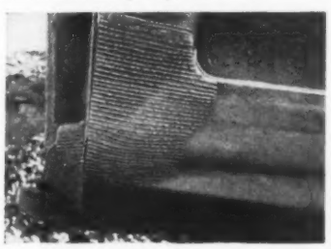
All Buckets Take a Beating... Here's the Medicine!

We're often asked about bucket maintenance, what hard-facing material to use and how to use it for maximum wear protection. Actually, your own equipment gives you part of the answer. Each bucket wears differently, depending upon how it is used and the kind of material handled. By watching for development of wear patterns, then hard-facing these areas at definite intervals, you'll get extended service with greatest economy. *Remember, a frequent touch-up is better than a major repair*...more economical in hard-metal and less costly in down time.

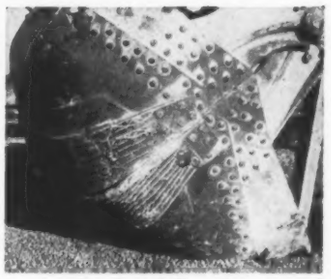
If buckets are severely worn, first build up with Stoody Manganese. For hard-facing, the alloy most commonly used is Stoody 21, preferred because of good wear resistance, fast deposition rate and low price. Occasionally, under conditions of excessive abrasion, Coated Tube Stoodite gives longer life on shovel teeth and reduces maintenance costs.

Full particulars on alloy recommendations and hard-facing procedures are in the Stoody HARD-FACING GUIDEBOOK. Ask your dealer for a copy (check the "yellow pages" of your phone book) or write direct.

Bucket teeth (top illustration) and adapters (above) are amply coated with Stoody 21. Hard-faced teeth on this job averaged two full shifts of extra service before needing additional hard-facing treatment.



These Stoody 21 beads across the bucket resist severe abrasion as it is dragged across rubble, returning for a new bite.



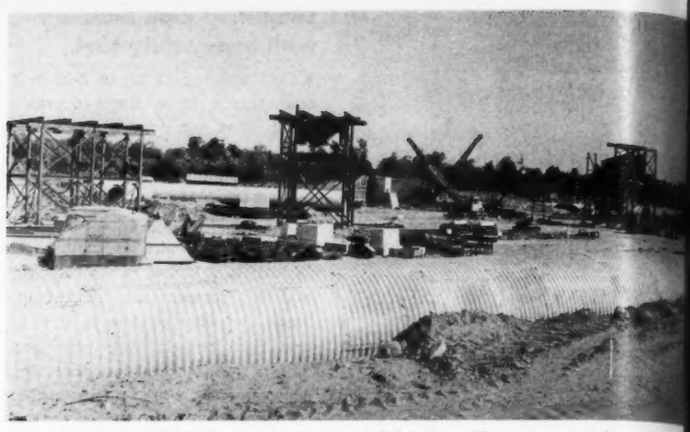
Lips on this clam shell are kept in good shape for a tight seal with Stoody 21.

Scoop lips often lead a tough life. Here, lips, sides and bottoms are kept in good condition with Stoody 21. Occasional touch-ups are made as wear occurs.

STOODY COMPANY 11936 East Slauson Avenue, Whittier, California

For more facts, use Reader-Reply Card opposite page 18 and circle No. 233

Conveyors transport rock through big aggregate plant



Three towers take shape for the three stages of the plant. The tower at right will carry the primary screens; the middle tower will have three screens, a cone crusher, and a triple roll; the tower at left will have a rod mill and other equipment. In the foreground is the Armco 9-foot recovery tunnel. *C&E Staff Photo*

One of the largest crushing and screening plants ever assembled for a construction project has gone into limited production, turning out part of the three million tons of aggregate which will ultimately be needed for St. Lawrence Power Development structures.

All American contractors on the U. S. portion of the work will be supplied with this material by Tecon-Grafe-Parsons, which was awarded the initial supply contract by the Power Authority of New York State. Tecon Corp., Dallas, Texas; Grafe-Callahan Construction Co., Los Angeles, Calif.; and Ralph M. Parsons Co., also of Los Angeles, the firms making up the joint venture, will supply aggregate in five sizes, ranging from 6-inch down.

Most of this material will go into the three main structures, which together will require more than 2.7 million cubic yards of concrete. The largest of the three is the Barnhart Island power plant, half of which is being built by the Hydroelectric Power Commission of Ontario. The other two structures are Long Sault Dam and the Iroquois Control Dam. (See "Start Is Made on St. Lawrence Power and Seaway Projects", C&E, October, 1955, pg. 30.)

Plant has three stages

Planning for an initial output of 500 tons per hour, T-G-P had a crew of about 100 men set up a flexible aggregate plant. If necessary, the capacity of the plant can be expanded to supply contractors building other structures in connection with the seaway.

Assembling the plant was largely a matter of constructing the proper

NEW

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"A PAYLOAD EVERY TRIP"
The ONLY Bucket that DIGS-IN instead of Lifting-Out. Write for literature
JOS. F. KIESLER COMPANY
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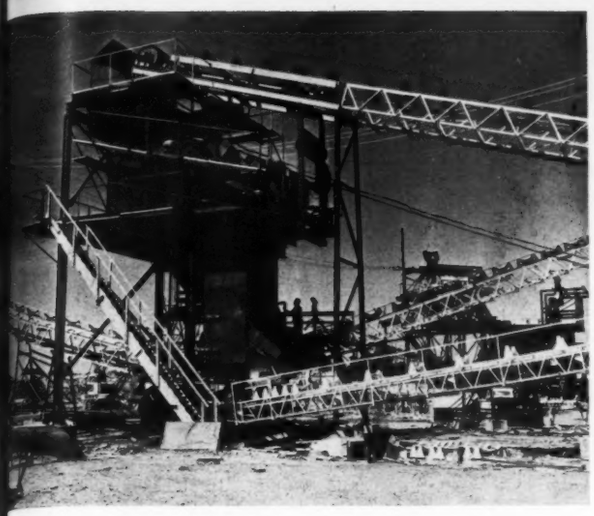

◄ Workmen assemble the two Pioneer screens of the primary unit. These 5 × 12-foot screens will send 6-inch material back to the primary crusher, minus-6 and plus-3-inch material to storage pile, and minus-3-inch to the second-stage surge pile.

Inverted trusses for the end of the conveyor-belt lines at the rod mill are assembled with the help of a Unit rubber-tire crane. A 100-man crew did the assembly job, but only 30 men are required to operate the plant.►

concrete footings and setting up the equipment. Footings and bases were formed with wood forms, and most of the concrete was poured directly from ready-mix trucks. A Bucyrus-Erie 22-B, a Unit 1020 on a rubber-tire carrier, a Schield Bantam, and a Northwest 6 crane erected the plant.

Most of the parts in this plant are new, but a few were moved in from other installations. While the crusher is working, each piece of mobile equipment will be carefully cleaned each week by a Malsbary steam cleaner, one of the important pieces of equipment in the carefully planned maintenance program.

The plant is divided into three distinct stages, which can operate together, independently, or in any desired combination. Provisions for large surge piles for the secondary and tertiary stages permit these operations to continue, even when the primary crusher is not in operation.

All transportation of aggregates in the plant is by conveyor belts. Once the rock from the quarry is dumped to the primary crusher, these belts carry all of the materials to and from the several processing stages and load the finished products into railroad cars on an adjacent siding. The plant is all-electric operated and semiautomatically controlled. Its entire operation calls for a crew of only 30 men.

Primary crusher

Dolomitic limestone rock for aggregate production is being obtained from a quarry adjacent to the plant site. After a Joy Champion drill prepares the 7½-inch blast holes, charges loosen the rock for loading. This year a 2½-yard shovel is loading a fleet

(*Continued on next page*)

DRILLING CONTRACTORS

Diamond and Shot Core Borings, Dry Sample Borings, Grout Holes and Pressure Grouting, Foundation Testing for Bridges, Dams and all Heavy Structures

Leading manufacturers, also, of High-Speed Diamond Drilling Machines and Complete Accessory Equipment, including all types of Diamond Drilling Bits.

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Simplify maintenance, and do a better job of it too! That's what you want, and that's what you accomplish when you switch to Sinclair LITHOLINE® Multi-Purpose Grease. This all-purpose lubricant enables you to cut service time to a minimum, and get lasting protection for all bearings and fittings. At all temperatures it's easy to use. Moreover, your grease jobs last longer because LITHOLINE resists water-washout, doesn't thin in summer heat, and won't oxidize and cake in bearing crevices.

What more could you ask than a proven "one grease – one gun" system of superior lubrication? There's less wear, no wasted time, and you save money. Call a local Sinclair Representative today for full information, or write for the new LITHOLINE pamphlet to Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. *There's no obligation.*

SINCLAIR LITHOLINE

Multi-Purpose Grease

For more facts, use Reader-Reply Card opposite page 18 and circle No. 237

of Euclid end-dumps and later, when production increases, another large shovel and more "Eucs" will probably be added. Loaded "Eucs" climb a ramp and dump directly onto a Cedarapids 50-inch×14½-foot heavy-duty apron feeder loading to the primary crusher.

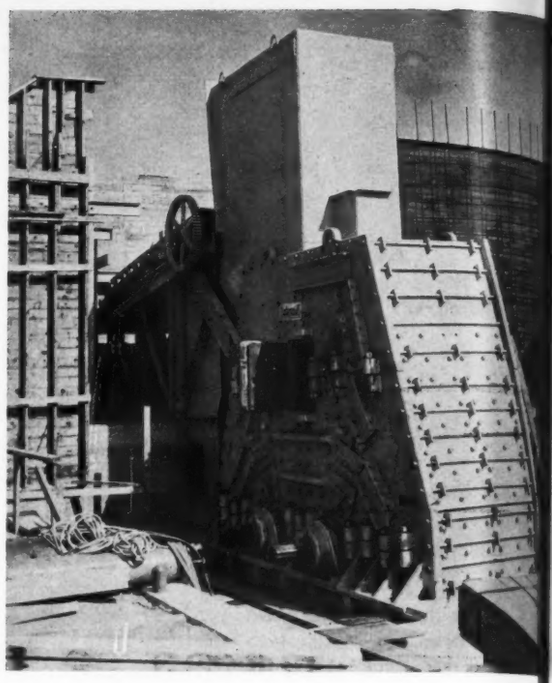
This big primary crusher, setting the pace for the entire plant, is a Cedarapids 5360H impact breaker capable of turning out minus-6-inch material at a rate of 800 to 1,000 tons per hour. Two 200-hp electric motors drive the impact breaker Impactor. A Link-Belt 48-inch conveyor carries the crushed material from the Impactor to two Pioneer double 5×12-foot screens. Minus-6-inch and plus-3-inch rock flows to a Barber-Greene 30-inch conveyor, which delivers material to the finished stockpile. Minus-3-inch rock is carried on a Link-Belt 42-inch conveyor to the second-stage surge pile, and oversize is picked up by a Pioneer 36-inch belt and returned to the Impactor.

Large surge piles

The minus-3-inch surge pile for the second stage of the plant, having a capacity of 38,000 tons, is built over an Armco 9-foot-diameter steel recovery tunnel. Two Syntron F66 feeders load the Pioneer conveyor carrying rock out of the recovery tunnel to the second stage screens and crushers.

This second stage consists of three Iowa double 4×12-foot screens operating in a closed circuit with a 4½-foot Nordberg cone crusher and a Pioneer 5424 triple roll crusher. The screen sends two sizes of finished material (minus 3-inch and minus 1½-inch) to the finished stockpiles on Pioneer conveyors. The minus-¾-inch travels a Barber-Greene 36-inch conveyor to the third-stage surge pile.

Material from the 11,000-ton third-stage surge pile is loaded by a Syntron F55 feeder to a Barber-Greene 36-inch belt operating inside an



ROGERS TRAILER DUO in 140 Ton Haul

The "know how" required for the moving and installation of heavy industrial products requires a knowledge of the characteristics and adaptability of the equipment used as well as the "tricks of the trade."

For the handling of this 140 ton transformer for the New York Consolidated Edison Company, Gerosa Haulage Company of New York, chose from their fleet of 20 Rogers Trailers these two 80 ton units.

The transformer was moved in by barge, picked up by a lighter derrick and placed astride the two Rogers trailers which hauled them to the power plant. An ingenious operation by master haulers and erectors.

By reason of repeated instances such as this over many years, Rogers Trailers are identified with a majority of such difficult and interesting heavy moves.

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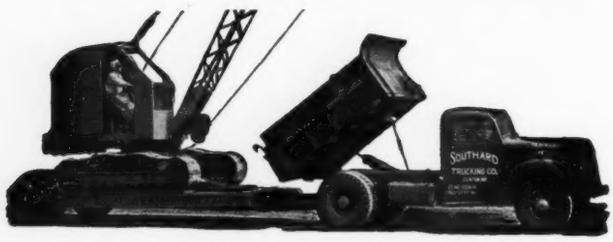
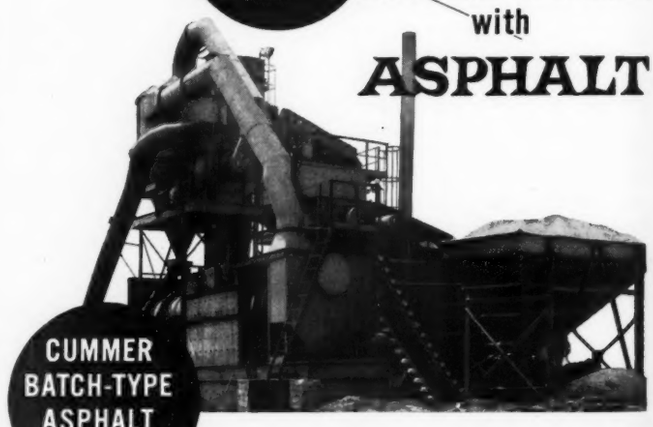


Attaching loaded tilt deck trailer

For more facts, use Reader-Reply Card opposite page 18 and circle No. 238

MORE THAN 80% OF ALL PAVED ROADS ARE NOW SURFACED with ASPHALT



CUMMER BATCH-TYPE ASPHALT PLANTS.... CONSISTENTLY PRODUCE RECORD TONNAGES WITH LESS DOWN-TIME

You can't beat the actual experience of "old hands" who have been operating Cummer Asphalt Plants for years when it comes to telling the real story behind Cummer equipment.

Such an "old hand" is Mr. Henry W. Jenkins, Vice-President of the Savannah Asphalt Company of Georgia. Mr. Jenkins says, "Our Cummer Portable Asphalt Plant—shown in the picture above—is rated at 60 to 70 tons per hour capacity. It's been delivering that in the three years we've owned it, and we're still surprised at how little we've had to shut down for repairs and replacements. The way we figure it, ruggedness and efficiency are built right into these Cummer Plants."

Cummer Asphalt Plants are batch-type complete with all motors and starter switches and all moving parts are individually motor driven.

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CUMMER

THE F. D. CUMMER & SON CO.

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Primary crushing is done by this Cedarapids 5360H impact breaker driven by two 200-hp electric motors and charged by a 50-inch × 14½-foot heavy-duty apron feeder just behind the crusher.

Armco 9-foot recovery tunnel. Provision is made in this stage for the blending of natural sand, which is fed in from a 75-ton storage bin through a 4×12-foot Pioneer screen on Pioneer 18-inch conveyors. The flow of sand is controlled by a feeder.

The tertiary plant includes four Cedarapids double-deck 4×14-foot screens, a Marcy 8×12-foot rod mill fed by two variable-speed feeders, an Eagle Iron Works 32-foot water scalping tank, and two Eagle 36-inch ×25-foot fine-material classifiers. A Pioneer 24-inch conveyor carries the minus-¾-inch material to finished storage while a conveyor of the same size takes the sand to its finished stockpile.

Water for third-stage processing and other plant uses comes both from a well drilled on the premises and from a nearby reservoir, created when small streams in a swampy area near the plant were dammed. Dirty water carrying waste from the sand-producing plant is returned to the reservoir so that fines settle out and the water can be re-used.

A unique feature of the plant is the arrangement of stockpiles of finished material in a straight line over a single Armco 9-foot-diameter recovery tunnel. This tunnel lies on the opposite side of the plant from the quarry and the second and third-stage surge piles.

Each of the five separate stockpiles over the tunnel has a capacity of 10,000 tons of finished material. Under each stockpile are two Syntron F55 feeders which load the Barber-Greene 42-inch-wide and 428-foot-long conveyor inside the tunnel. A Barber-Greene 42-inch×99-foot inclined conveyor picks up the material at the mouth of the tunnel and deposits it directly in railroad cars standing on a Howe 100-ton track scale on the spur adjacent to the plant.

This spur, built from the New York Central line into the plant site permits aggregates to be taken directly to the construction site via the New York Central and Massena Terminal railroads.

Personnel

Project manager for Tecon-Grafe-Parsons is K. C. Gravenhorst. Office manager is Elmer Clausen. Plant superintendent is Red York, and assistant superintendent is R. L. Ellingson. The engineering firm of Uhl, Hall & Rich, Boston, Mass., is consulting engineer for the Power Authority of New York State on the St. Lawrence Power Project. Frank Matejka is project manager for the engineering firm, and Harry McLean is concrete engineer. Robert Moses is chairman of the Power Authority of New York State. THE END

Now 1/4-inch fasteners fit 3/8-inch power tool

■ To simplify fastening operations on construction projects, Ramset Fastening System offers ¼-inch threaded stud-pipe fasteners modified for use in its ⅜-inch power-actuated tool. The development is said to eliminate barrel changes in 90 per cent of normal fastening work.

The double use of the ¼-inch fastener was made possible by replacing the ¼-inch plastic tip normally used with a ⅜-inch plastic tip. A re-usable screw-on utility driver head is supplied for use on the threaded end of the stud, making the ¼-inch fastener fit perfectly in the ⅜-inch barrel.

The ¼-inch fasteners fitted with ⅜-inch red plastic tips are available in packages of 100. Ten re-usable utility driver heads are included.

For further information write to The Ramset Fastening System, Winchester-Western Division of Olin Mathieson Chemical Corp., 460 Park Ave., New York 22, N. Y., or use the Request Card at page 18. Circle No. 17.

AT NATICK, MASS.

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THE INGALLS IRON WORKS COMPANY ★ Fabricating Steel is our Business
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For more facts, use Reader-Reply Card opposite page 18 and circle No. 240

"...Our Radio System Paid for itself on this one Job Alone!"

—Says Al Lizza, President, Lizza & Sons, Inc.
Contractors for Garden State Parkway

Trucks operating on parkway construction are under radio control at all times.

"With our operations extending over 22 miles of the Garden State Parkway, I can pick up the mike and talk to any man on the job. If any of the rigs break down, we get a service truck out on the road in a few minutes. Operations at the plant can be quickly adjusted, too, so that our fleet of hot-mix doesn't pile up at the 'down' machine."

Lizza & Sons has mobile units in the superintendent's car, master mechanic's and foremen's trucks, and other units on the lube trucks, two of the graders and five of the pickups. A control station at the asphalt plant keeps a dispatcher in touch with trucks at all times. Radio has earned hundreds of dollars a month in time saved by quick intercommunication between personnel. "It's likely our radio system paid for itself on this one job," adds Mr. Lizza.

Savings on the job mean increased profits. You'll find out, too, that actually radio costs you very little because it's self-amortizing.

(Top) Al Lizza at mike in field office talks to service trucks on road; and (above) Wally Slauson, Superintendent, trouble shoots operations from his car.

GET THE BEST—GET RCA 2-WAY RADIO! Quality that only the leader in radio and electronics can offer gives assurance of top performance under the most gruelling conditions. Simplest maintenance and operating requirements. The RCA Service Company provides installation and service to keep your equipment operating at its best.

MAIL COUPON FOR MORE INFORMATION

Radio Corporation of America
Communications Equipment, Dept. Z-277, Building 15-1, Camden, N. J.
☐ Send information on RCA 2-Way Radio for Construction.
☐ Have RCA representative call on me.

NAME _____ TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

RADIO CORPORATION of AMERICA
COMMUNICATIONS EQUIPMENT CAMDEN, N. J.

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 241

Lightweight winch-hoist has two-ton capacity

■ The Lug-All Co., 355 Lancaster Ave., Haverford, Pa., announces a lightweight 2-ton winch-hoist with 20 feet of cable. The unit lifts, lowers, or pulls 2 tons a distance of 10 feet when used double cable, or handles 1 ton a distance of 20 feet when used single cable.

The new Lug-All weighs only 15 pounds, and features a rugged, protective-type main frame of high-grade aluminum alloys that allows instant inspection and easy cleaning, oiled-for-life bearings, stainless-steel springs, three workable hooks, and a built-in pulley that can be used as a snatch block in close-quarter work.

According to the manufacturer, costly accidents are prevented by a safety handle that bends before the unit can be overloaded. An interlocking pawl system securely locks the load, and there are no brakes to slip.

For further information write to the company, or use the Request Card at page 18. Circle No. 22.

Tough, protective film from new form coating

■ A new form-coating material said to combine improved efficiency with economy is offered by Stonhard Co., 1306 Spring Garden St., Philadelphia 23, Pa.

A double-acting feature of this new coating reportedly eliminates waste caused by excessive penetration of coating oils into wood or draining off of oils on metal forms. Part of the coating penetrates wood forms, while the rest of the material dries by oxidation to leave a tough protective film.

A further saving, according to the company, results from the fact that Stonhard form coating has a lasting free-stripping quality. Only three applications are said to be necessary for 10 uses of wood forms.

Because of its dark color, this coating reportedly gives visible protection in concrete-forming; one glance tells whether or not the area has been coated, and there is less chance of a missed area of the form bonding to the concrete. The material also prevents rust formation on metal forms.

For further information write to the company, or use the Request Card at page 18. Circle No. 43.

Colored surface sealers for bituminous concrete

■ A pitch emulsion that is insoluble in oils and gasoline, can be quickly applied, and is said to improve and protect the surface of blacktop paving has been developed by Maintenance Engineering Co., 16 W. Johnson St., Philadelphia 44, Pa.

Designed to prevent softening and disintegration of bituminous concrete due to attack by oils, greases, gasoline, jet fuel, and weather, Meco Black Knight surface sealer is available in three colors—charcoal, green, and red—to improve appearance as

Meco Black Knight surface sealer is easily applied to bituminous-concrete pavement by brush or with a machine. ►

International distributor delivers...

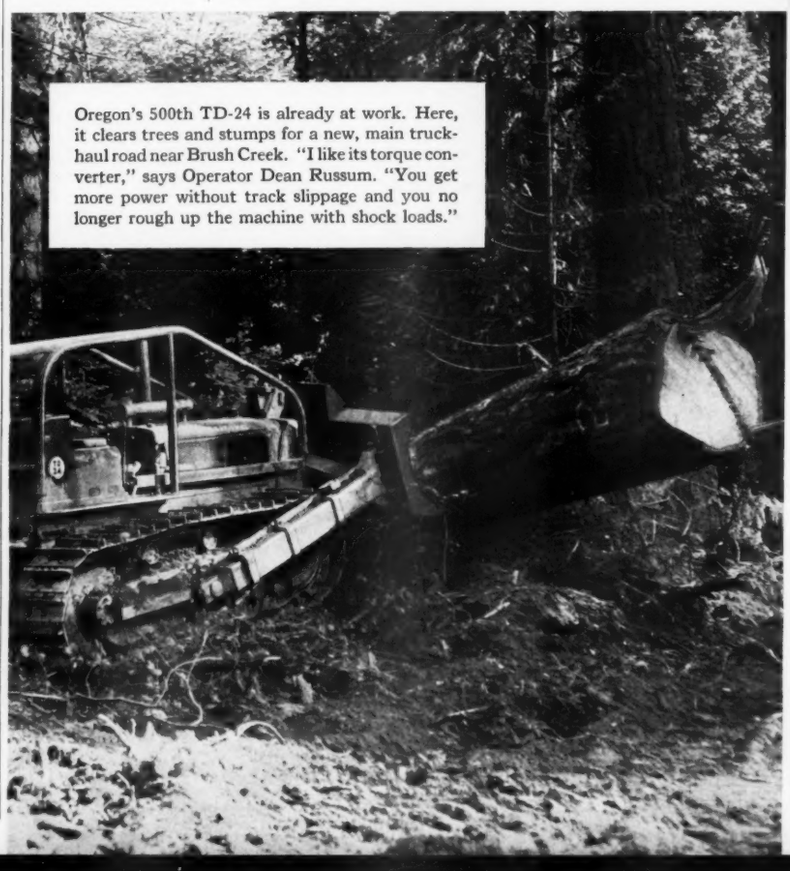
500 TD-24's

For pioneering and road building in the rugged northwest

Howard-Cooper Corporation, one of International's 31 Western area distributors, have just delivered their *500th TD-24!*

You see this big 200 bhp crawler already at work for Wooley Logging Company, Drain, Oregon.

In rough, tough, Pacific Coast, big-scale logging, mining, and earthmoving, profitable production depends upon positive load-control, up-grade or down. *The TD-24 is the only tractor built that has planet-power steering—which gives you constant load control on both tracks when turning.* That's why the TD-24 out-produces the others so decisively, with dozer, arch, or scraper! Another big TD-24 advantage is its built-for-the-West construction. Records, on fleet after fleet, prove that TD-24's stand up under the toughest conditions—and consistently cost less for maintenance than any other make on tracks! TD-24 high-altitude performance is a big advantage, too—so is its seconds-fast, cold-weather starting and operating ease!



Oregon's 500th TD-24 is already at work. Here, it clears trees and stumps for a new, main truck-haul road near Brush Creek. "I like its torque converter," says Operator Dean Russum. "You get more power without track slippage and you no longer rough up the machine with shock loads."

TD-24

6 for A. J. Orlando on Massachusetts Turnpike—Most of the tractor w... this Whiteside (N.Y.) contractor... mile, 2,500,000-yard, $3,340,000 ... of the Massachusetts Turnpike i... done by TD-24's. One pushing 3 sc... accounts for 4,500 pay yards ev... hours (scrapers on 1,500-ft. c... hauls). Others pull rippers, level fi...

If you're in the market for ... tractor, you owe it to yours... check the leader . . . the In... tional TD-24. Five-hundred... ers in just one area have pro... their "Best Buy." If it can s... cessfully and so profitably h... tough rock, cold weather... mountain grades of Oregon, ... successfully and profitably h... high-cost jobs, too! Let us ... its advantages with a demonst... Call to arrange time and pla...

well as protect bituminous concrete on parking lots, driveways, maintenance yards, airport taxiways, and other asphalt installations. The sealer is also recommended for use on portland-cement concrete floors within service shops or plant buildings.

With this protective sealer, new blacktop can be improved in appearance and durability, and old blacktop paving can be made to appear new by using the coating to fill cracks, checks, depressions, and small holes, according to the manufacturer. On exterior paving, the sealer is said to prevent cracking, heaving, and breaks due to penetration of water, softening of the base, or disintegration due to freezing.

Put down quickly and simply by machine or manually by brush, the sealer, as it comes in the container, is applied to a wet surface and dries in a few hours.

For further information write to the company, or use the Request Card at page 18. Circle No. 119.

Conveyor belt chart

■ A wall chart on the proper selection and maintenance of conveyor belting is offered by Hewitt-Robins, Inc. to contractors and others who use material-handling equipment. The chart, measuring 23×33 inches, contains 12 practical maintenance tips for getting more life out of belts. It deals with storage of belts, correct design of loading chutes, use of automatic switches, lubrication, inspection, and other important aspects of maintenance. The chart also lists the types of belts recommended for various uses.

To obtain this chart write to Hewitt-Robins, Inc., 666 Glenbrook Road, Glenbrook, Stamford, Conn., or use the Request Card at page 18. Circle No. 101.

The Mall 2P18 pneumatic chain saw easily cuts hemmed-in timbers in such out-of-way places as tunnels.

Pneumatic timber saw works in close quarters

■ A pneumatic chain saw especially recommended for use in close cutting quarters is announced by the Mall Tool Co. Said to require less air than reciprocating-type saws, the new model reportedly handles easily and cuts timbers quickly.

Mall's "plunge cutting" technique allows the saw to cut through timbers without clearance. The operator simply plunges the round nose of the cutting bar into the timber and then works it up and down to cut completely through. Even if the timber is hemmed in on three sides the cutting can be done, according to the manufacturer.

The one-man-operated Model 2P18 has a ⅜-inch chain, and cutting bars are available from 18 to 30 inches. It is constructed of rust and corrosion-resistant aluminum. The saw has an automatic motor oiler and a trigger throttle. Classified as a high-capacity, heavy-duty model, the tool is said to be capable of sawing timbers up to 60 inches in diameter by cutting from both sides.

For further information write to Mall Tool Co., 7725 S. Chicago Ave., Chicago 19, Ill., or use the Request Card at page 18. Circle No. 16.

Year-round fluid for Torqmatic drive

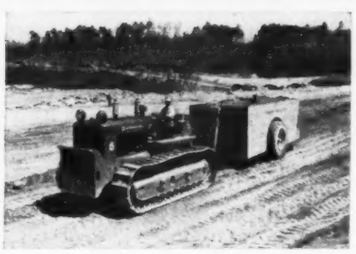
■ D-A Lubricant Co., Inc., announces a new torque fluid designed specifically for year-round use in the Allison Torqmatic drives. The fluid meets and exceeds Allison's specification for Type C hydraulic transmission fluid.

According to the manufacturer, D-A torque fluid provides proper affinity for seals to prevent seal deterioration, as well as exceptional stability and resistance to oxidation through long hours of service at high temperature. The new oil reportedly will not thicken or develop sludge in service.

D-A torque fluid is packaged in drums only, since capacity of the Allison Torqmatic drive is 35 gallons.

For further information write to D-A Lubricant Co., 1331 W. 29th St., Indianapolis, Ind., or use the Request Card at page 18. Circle No. 14.

← For more facts, circle No. 242



Y OFF ACROSS THE COUNTRY

Armstrong on Kansas Turn-
f their 9 TD-24's, this Ames ontractor reports all have run urs or more before needing any rk. Six on 1.7-mile, million-yard section near Emporia, are tow- rollers, pulling and push-load- ers. On hauls of 700 to 2500 ft., unt for 5,000 pay yds. per day.

2 for J. W. Moorman on Buford Dam, Georgia—These "24's", two of the five now owned by Moorman, push-loaded scrapers or pulled 50-ton rubber-tired rollers, 18 hours every day for 18 months. On compaction, they averaged 180,000 cubic yards weekly for the 200-ft.-high, 1630-ft.-long main dam. Moorman's other TD-24's are used to push-load scrapers, and pull or push belt loaders.

3 stripping overburden for Meyer Bros., Pennsylvania—"Proven crawlers," says Partner George Meyer of his TD-24's. "We've used our 3 for 3 years now. They have good balance plus unmatched push power." Right now, rigs are removing 30 feet of shale and clay to uncover a 30-inch vein of bituminous coal. The 2 TD-24's do 80% of the job; a large shovel, 20%.

International Industrial Power

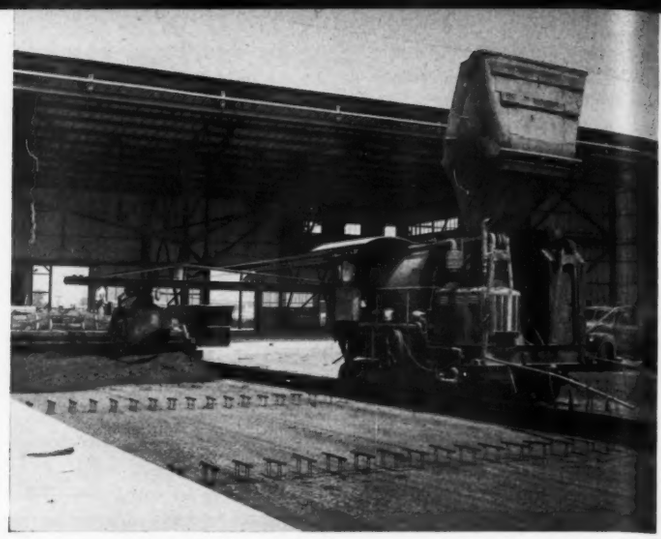
A machine size for every job . . . see your nearest INTERNATIONAL DISTRIBUTOR for details.

INTERNATIONAL HARVESTER

PAYSCRAPERS 13 yds. and 18½ yds. | WHEEL TRACTORS 6 Models . . . . . 9 to 59 dbp | CRAWLER TRACTORS 8 Models . . . 40 to 200 hp | DIESEL, GAS ENGINES 18 Models, 14½ to 200 hp

ALSO: International Drott Loaders . . . International Scrapers, Bottom-Dump Wagons . . . and International Superior Pipe-Boom Tractors.

A Blaw-Knox spreader with nine Viber electric vibrators mounted on the rear platform is lowered onto the forms by a P&H truck-crane. The spreader is set as far back as possible to make concrete meet the hangar floor. *C&E Staff Photos*



A Koehring Twinbatch paver starts feeding concrete for a 25-foot-wide 300-foot long lane to the Blaw-Knox spreader. Wire chairs hold 1¼-inch dowels in place exactly 7½ inches below the surface.

Military air base is converted to handle largest of new craft

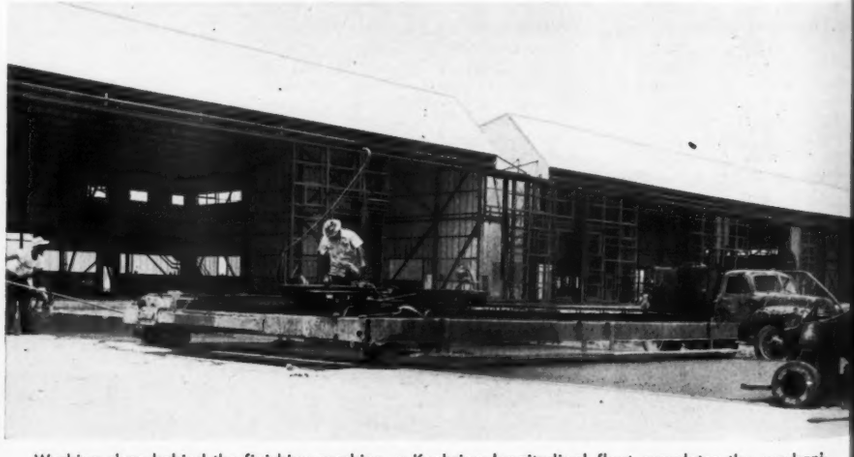
New runway, taxiway, and taxi stubs constructed at Westover air base for Strategic Air Command use

Nine Viber electric vibrators consolidating the concrete are mounted on the spreader so that they will not come in contact with the dowels. The end vibrators are adjusted to work close to the form.

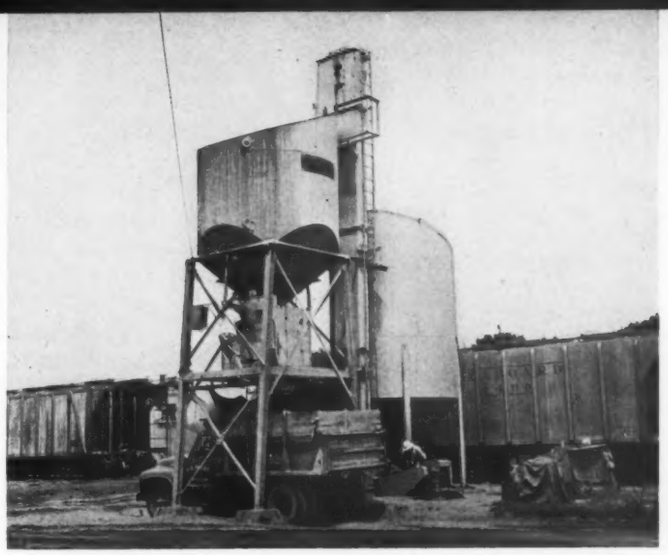
Converting a Military Air Transport Service (MATS) center at Westover Air Force Base, Chicopee Falls, Mass., into a Strategic Air Command base involved construction of a runway, taxiway, and taxi stubs in front of multipurpose hangars.

Supervised by the New England Division of the U. S. Army Corps of Engineers, the most important phase of the $8,837,652 job was the construction of the 11,600 × 300-foot runway. A 100-foot-wide asphaltic-concrete taxiway runs between two rows of multipurpose hangars to feed the runway from both ends. Also, 300-foot-long taxi stubs of 15-inch-thick concrete-slab construction separate the taxiway and the hangars. Concrete warmup pads, 445 × 550 feet and 350 × 600 feet, are provided adjacent to the ends of the runway, and an additional 350 × 607-foot parking apron is located at the south end. Starting work on the runway in 1953,

This Blaw-Knox double-screed transverse finishing machine is also lifted onto the forms by a P&H truck-crane. The finisher starts its work almost at the floor of the hangar.



Working close behind the finishing machine, a Koehring longitudinal float completes the mechanical paving train. Workmen equipped with aluminum straight-edged lutes dress up the concrete after the float has passed.



Cement delivered by bottom-dump rail car is transferred by worm conveyor to a vertical bucket elevator leading to the Butler 600-barrel cement silo. The material is being weighed out to a Ford 3-batch-capacity truck. *C&E Staff Photo*

Lane Construction Corp., Meriden, Conn., subcontracted the placing of 500,000 cubic yards of fill to bring the runway subbase up to grade. Borrow pits were set up approximately half a mile from the runway, and fill was hauled by rubber-tire scrapers and compacted by a Tampo four-wheel 50-ton roller.

Runway, taxiway similar

After the fill had been placed, Lane brought in rollers, pavers, spreaders, and finishers, and began to lay asphalt for the runway, which was similar in construction to the taxiway. A government-furnished 200-ton rubber-tire roller was used on all cut sections. A 4-inch selected-gravel subbase course was compacted to 100 per cent density by the Tampo roller before the 6-inch-thick base of 2½-inch-minus crushed rock was laid and choked with dust.

The rock, purchased from a commercial firm, was delivered directly to the site. After this 6-inch blanket course had been compacted to 100 per cent density by a Jackson electric vibrator, a prime coat of MC-0 cutback asphalt was applied by an Etnyre pressure distributor at a rate of 0.3 gallon per square yard.

A 12-foot-wide binder course of 1-inch-minus aggregate was placed by a Barber-Greene paver and compacted by a Buffalo-Springfield three-wheel 10-ton roller, followed by a Buffalo-Springfield three-wheel tandem 15 to 21-ton roller. Both units made at least five passes to obtain a minimum of 92 per cent of maximum theoretical density. An RC-2 tack coat was applied at a rate of 0.1 gallon per square yard by the same pressure distributor before the 1½-inch wearing surface was laid by the Barber-Greene. Compaction of this course, consisting of ¾-inch-minus aggregate, was handled by the same rolling equipment supplemented by a Tampo multi-rubber-tire roller getting a 98 per cent compaction. Working a 10-hour day, Lane made his best production, 1,300 tons, while putting down the binder course.

Problems on taxi stubs

Even though the taxi stubs, warmup pads, and the two 1,000-foot end sections are identical in construction, the taxi stubs presented a few problems not encountered on the other sections. All consist of an unreinforced-concrete slab 15 inches thick on an 8-inch-thick gravel base of 4-inch stone covered by a layer of sand. This course was compacted to a 95 per cent density by the Tampo 50-ton roller. After two scratch boards had passed over the base, it was compacted by a Buffalo-Springfield 3 to 5-ton roller prior to concrete placing. The taxi stubs, put down in 25-foot lanes, start at the edge of the hangar floor slab and extend perpendicular to the taxiway.

The contractor's method of driving the form stakes, using a self-propelled Le Roi Tractair 105 air compressor to secure the 10-foot forms to the base, reached the time required to complete a 25-foot lane. A total of 4,000 feet of forms were secured in this way. Three rows of dowels, 1¼ inches in diameter, were spaced every 25 feet for 75 feet at either end of the 300-foot lane of the taxi stubs. Dowels were spaced on 1-foot centers. Held in place by wire chairs, the dowels were exactly 7½ inches below the surface of the stubs.

Paving setup

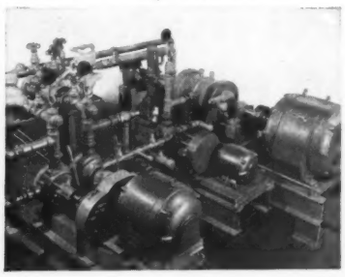
Once the 15-inch forms and dowels

(*Continued on next page*)

4 Steps to Better Paving with EMULSIFIED ASPHALT

CONTINUOUS RESEARCH and "pilot studies" are conducted in the central laboratory at Lafayette. All McConnaughay-Approved Specifications run the gauntlet of at least two years' laboratory testing and development, followed by five years of field tests.

QUALITY-CONTROLLED PRODUCTION of emulsions through mills designed to handle up to 100,000 gallons per day (Model B-14-18 illustrated). McConnaughay mills have outstanding records of dependability extending over 25 years of successful operation.



ACCURATE MIXING of emulsions and aggregates according to McConnaughay Specifications designed to meet general as well as local requirements. All McConnaughay Licensees are experienced contractors who bring practical "know how" to mixing operations.

EFFICIENT LAYING . . . the final step in the coordinated service from laboratory to emulsifier to mixer to paver. Our extensive, closely-knit organization, fully experienced in all phases of the industry, gives assurance that McConnaughay Licensees will do the job right.

Look to your nearest McConnaughay Licensee for the fast, dependable service on any paving job. Fully equipped to take on complete contracts or provide the laboratory facilities, emulsions and technical services required . . . he is always ready to work with you closely in solving any problem. If you are figuring on highway, street, or general paving, get in touch with your nearest McConnaughay Licensee or contact . . .

K. E. McCONNAUGHAY LAFAYETTE INDIANA

EMULSIFIED ASPHALT PLANTS AND PROCESSES

McCONNAUGHAY LICENSEES Operating K. E. McConnaughay Emulsified Asphalt Plants

1. Wabash Valley Asphalt Co. *Terre Haute, Indiana*
2. Brookman Construction Co. 17th & Gharkey Sts., *Muncie, Ind.*
3. Fauber Construction Co. *Lafayette, Indiana*
4. Asphalt Materials & Construction, Inc. 960 E. 22nd, *Indianapolis 2, Ind.*
5. Ready-Mix Asphalt, Inc. P. O. Box 882, *Fort Wayne 6, Ind.*
6. Walsh & Ikeler R. R. #2, *Gary, Indiana*
7. Bituminous Materials Co. 416 S. Water St., *Jackson, Mich.*
8. Bituminous Materials Co. 318 Atlantic St., *Bay City, Mich.*
9. Emulsions, Inc. *Lawrenceville, Illinois*
10. Bituminous Materials & Supply Co. 415 Maple St., *West Des Moines, Iowa*

Plants:

11. *Spirit Lake, Iowa*
12. *Iowa City, Iowa*
13. *Menlo, Iowa*
14. Doherty and Swearingen Co. 53 Main St., *Yarmouth, Maine*
15. Berkshire Asphalt Co., Inc. 620 Berkshire Ave., *Springfield, Mass.*
16. James Huggins & Sons, Inc. Medford & Commercial Sts. *Malden 48, Massachusetts*
17. C. C. Plumb, Elmwood Station P. O. Box 65, *Providence 7, R. I.*
18. C. C. Plumb *Portland, Connecticut*
19. Albany Asphalt & Aggregates 75 State St., *Albany, New York*
20. Knight Paving Products, Inc. 1655 Union Rd., *Gardenville, N. Y.*
21. Knight Paving Products, Inc. Vine Street, *Ithaca, New York*
22. Knight Paving Products, Inc. 1980 East Ave., *Rochester 10, N. Y.*
23. Knight-Bitumen Corp. *Watertown, New York*
24. Seaco, Incorporated 2700 Industrial Drive, *Columbia, S. C.*
25. E. A. Mariani—Emulsified Asphalt Hooker's Point, *Tampa, Florida*
26. Pan-Am Southern Corporation P. O. Box 2, *New Orleans 6, La.* (Also serving Alabama and Mississippi)
27. Emulsified Asphalt Co. *Cuttawa, Kentucky*
28. Asphalt Products Co., Inc. Powell Ave., *Nashville 11, Tenn.*
29. Bituminous Materials Co. P. O. Box 267, *Terre Haute, Ind.*

Eastern Representative:
John A. Dow
157 Church St., *New Haven 10, Conn.*

SPECIFICATIONS OF THESE COLD-MIX PROCESSES AVAILABLE ON REQUEST

1—Penetration Macadam, 2—Open-Graded Plant Mix, 3—Open-Graded Road Mix, 4—Dense-Graded Plant Mix, 5—Dense-Graded Road Mix, 6—Mat Coat, 7—Seal Coat, 8—Sand Mix, 9—Sand Honing, 10—Patching, 11—Mastic-Mix, 12—Driveway Construction.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 243

The Blaw-Knox 40-ton aggregate hopper is charged by a Lima 601 crane with 60-foot boom. The aggregate, delivered to the site from a commercial quarry 17 miles away, is stored in stockpiles of 1 and 2-inch rock and sand around the hopper. *C&E Staff Photo*

were in place, a Koehring Twinbatch paver with a 35-foot boom placed 1½-inch-slump concrete flush with the hangar floor slab at a rate of one batch every 45 seconds. Water for the paver was supplied by three 1,000-gallon water trucks. The stubs were poured in one lift, and as soon as the first row of dowels had been reached, a Blaw-Knox spreader was brought up by trailer truck and lifted into position on the forms by a P&H truck-crane.

The spreader was set as far back on the forms as possible so the warmup pad could be completed as near as possible to the hangar floor slab. Mounted on the spreader's rear platform were nine Viber electric vibrators and the Onan generator which powered them. The long vibrators were spaced so that no dowels would be in their path. When the spreader was riding on forms, the end vibrators were placed to within six inches of the side forms. When the paver was working on a previously poured slab, only the end vibrator near the forms was adjusted to assure concrete being placed right up to the form.

The installation of an electrical outlet on the side of a spreader allowed workmen to connect electrically driven hand-operated vibrators and to go over any area that needed further consolidation. This was particularly useful since the spreader could not start flush with the floor slab of the hangar.

A 10-foot opening in the forms at the far end of the lane allowed a water truck to enter and wet down the base just ahead of the spreader. A contractor-built machine, this truck consisted of a 1,000-gallon tank mounted on a Ford truck, a Barnes water pump powered by a Wisconsin engine, and a 3-inch water line which ran from the pump in the rear, over the left window of the cab, down over the left fender, and to a spray outlet directly in front of the grille. The driver controlled the 25-foot-wide spray by a lever valve in the line over the door.

As the spreader and paver moved ahead, a Blaw-Knox double-screed transverse finisher was lifted onto the forms by the P&H truck-crane. As soon as there was enough room, a Koehring longitudinal floating machine was also placed on the forms by the crane to complete the mechanical paving train. The workmen, equipped with aluminum straight-edged lutes, followed the floating machine closely to dress up the concrete surface. A hand-rolled burlap drag finished the job. When the surface was sufficiently dry, a curing compound was sprayed over it. Forms were stripped after twenty-four hours. Approximately 12 hours after pouring, 2½-inch-deep control joints were sawed every 100 feet along the slab by a water-cooled diamond blade to control breakage of the concrete during setting. Immediately afterward, the contractor sawed

How Willard makes concrete placing *easier... faster!*

5½ C.Y. WILLARD with fluid drive

HELPER FINS	at mouth of drum discharge smoothly without surge.
SINGLE LEVER CONTROL	operates throttle and drum brake.
DRUM BRAKE	prevents roll back and concrete re-surge.
CLUTCH ACTS AUTOMATICALLY	when shifting gears to mix or discharge.
EXTRA LONG CHUTE	is 17 feet with extensions.
HYDRAULIC LIFT ARM	raises or lowers end of chute for accurate placing.

See your local Willard dealer or write for descriptive bulletin.

Member: T.M.M.B.

Manufactured in Los Angeles, California and Galion, Ohio

WILLARD CONCRETE MACHINERY SALES COMPANY
11700 WRIGHT ROAD, LYNWOOD (LOS ANGELES COUNTY), CALIFORNIA

WILLARD TRUCK MIXERS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 244

Birmingham

HEAVY DUTY TRAILERS

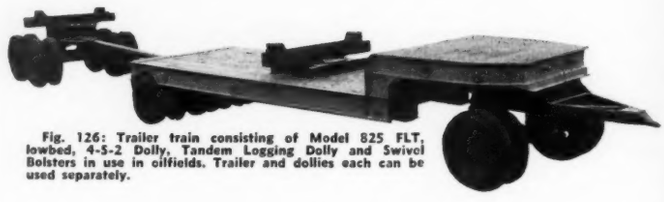


Fig. 126: Trailer train consisting of Model 825 FLT, lowbed, 4-5-2 Dolly, Tandem Logging Dolly and Swivel Bolsters in use in oilfields. Trailer and dollies each can be used separately.

"RUGGED WEAR OVER THE LONG HAUL"

Move your own equipment when and where you want, including pipe, bulldozers, power cranes, dirt movers or any kind of heavy material or machinery. Birmingham Trailers are built in standard and special models, and 10 to 265-ton capacity. Electrically welded steel-shape frames, 2¾" oak decks, Standard Forge axles, Bendix-Westinghouse brakes, I.C.C. lighting.

Write or wire for catalog and name of our Distributor in your territory.

PARTS SERVICE

We carry a complete line of standard parts for all models of Birmingham Trailers. Our parts service is prompt and reliable.

Birmingham MANUFACTURING COMPANY, INC.

Main Office and Factory, Birmingham, Alabama, P. O. Box 1351 . . . Phone 53-5496
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For more facts, use Reader-Reply Card opposite page 18 and circle No. 245

2½-inch joints every 25 feet and filled them with a bituminous filler. The construction of the end sections of the runway was identical, but the crane was not needed to place equipment in the paving train.

Concrete batch plant

Concrete batches were hauled approximately ¾ mile to the project in Ford trucks with a 3-batch capacity. Located alongside a 1,000-foot railroad spur built by the contractor, the batch plant consisted of a drive-through-type Blaw-Knox 40-ton aggregate hopper and a Butler 300-barrel cement hopper.

Stockpiles of the various-size aggregate—1-inch and 2-inch trap rock and sand—surrounded the hopper but left room for the batch trucks to drive under the hopper. A Lima 601 crane with a 1½-yard clamshell and 60-foot boom charged the hopper from the stockpiles and assisted a Caterpillar D7 tractor in maintaining the stockpiles. The aggregate was delivered by truck from a commercial quarry 17 miles from the project. Each batch consisted of aggregates (measured dry) which were weighed out by a Toledo beam scale in these amounts:

Sand	1,564 pounds
Stone (trap rock), 1-inch	1,961 pounds
Stone (trap rock), 2-inch	1,306 pounds

Loaded trucks then received 742 pounds of cement (measured dry) and 320 cc of air-entraining agent per batch. Rail cars delivered bulk cement to the plant and unloaded through bottom-dump hatches which fed a worm conveyor. The cement was raised 25 feet from the worm conveyor through a vertical bucket elevator for storage in the 600-barrel cement silo. A Butler 300-barrel hopper was also filled by the same bucket elevator.

The multipurpose hangars, being built under a separate $4,329,000 contract, by T. C. Bateson Co., Dallas, Texas, will house any plane being used by SAC, the number depending on the size of the aircraft. These nose-in-type hangars have circular openings in their doors to fit around the protruding portion of such huge bombers as the B-36.

All the work in connection with the runway was completed this past September, but follow-up work around the new base will continue until next summer.

Personnel

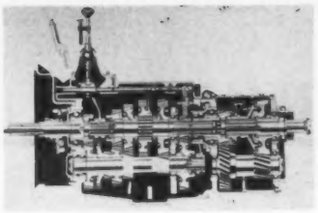
Daniel H. Steinhoff was the resident engineer at Westover Air Force Base for the New England Division, U. S. Army Corps of Engineers. Harold Sanford was the engineer in charge of the runway construction, George A. Harris III was the portland-cement concrete engineer, and William F. Kane, the bituminous-concrete engineer for the division. Lane Construction Corp. was represented by C. E. Goodell, superintendent, Bill Hurley, concrete foreman, and Alva Nason, bituminous foreman. Communication between the superintendent, foremen, and batch plant is handled by Motorola base and mobile units. THE END

New transmission model offers nine gear ratios

■ Fuller Mfg. Co., Kalamazoo, Mich., announces a new RoadRanger semi-automatic transmission, the Model R-1150, providing nine selective gear ratios, evenly and progressively spaced, for use in off-highway vehicles equipped with engines in the 1,150-cubic-inch class.

Ratios average 38 per cent between steps, with four speeds provided in the low range and five speeds in the high range of the transmission.

The new Fuller transmission incorporates an all-air range shift control system, consisting of an air valve and controlling cable which together provide pneumatic control. The nine forward speeds are obtained with only one lever and a selector handle.



The Fuller Model R-1150 RoadRanger transmission.

The heart of this transmission is its quick, easy single-lever shifting, which is said to eliminate the difficult and time-wasting process of gear-splitting and to permit the operator to select rapidly the right gear ratio as he anticipates the need.

For further information write to the company, or use the Request Card at page 18. Circle No. 2.

Data on first-aid kits

■ First-aid kits in various sizes for use on construction projects are described in a folder from The Pac-Kit Co., Box 1306, Greenwich, Conn. Contents of each kit are listed, and replacement items are described.

Pac-Kit first-aid items are packed in moisture and dustproof steel cases equipped with secure latches and a carrying handle. Four standard-size kits suitable for groups of from 20 to 50 workers are illustrated. Two pocket-size kits are also described.

To obtain this folder write to the company, or use the Request Card at page 18. Circle No. 200.

Cuts 10 in. deep, carries 21 yard loads

TIMKEN® bearings keep it wheeling

CARRYING 21 yard loads, and often through conditions of heavy dust and dirt, the wheels of this International Harvester B170A scraper presented a neat design problem. How to keep out the dirt that would soon ruin any bearings under this load and yet take the heavy shock loads?

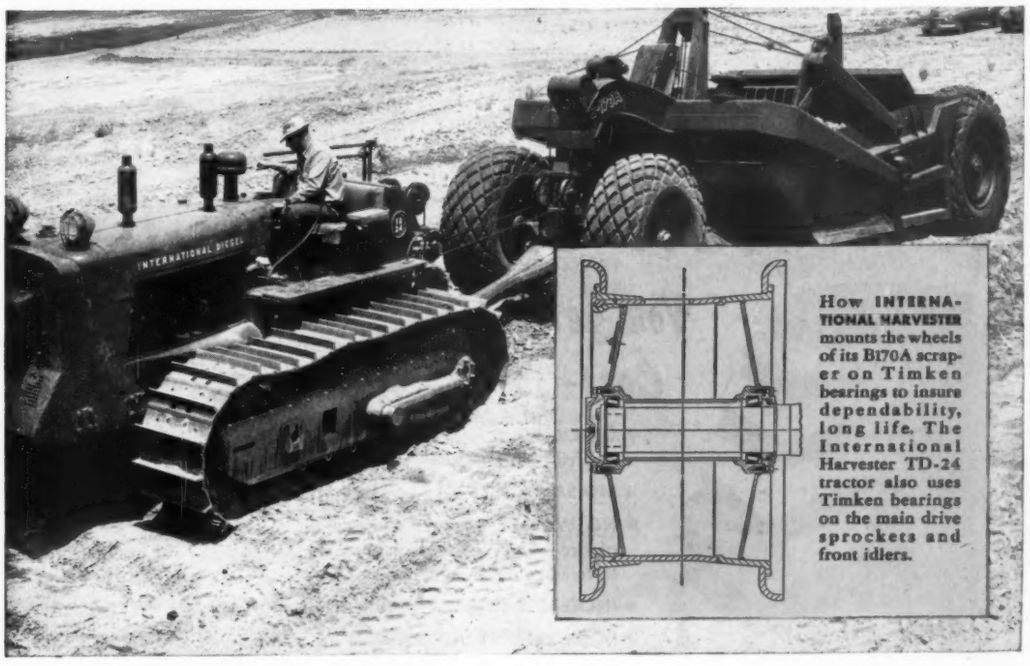
The solution: Timken® tapered roller bearings. Their precision keeps axle and wheel hub concentric and helps to provide maximum closure efficiency. Their tapered design lets them take any combination of radial and thrust loads, preventing side motion of wheels. These features work together to make the closures more effective, keep dirt from getting in, and keep the grease from getting out.

Timken bearings have exceptional capacity, since the load is carried on a *line* of contact between race and roller. They can take the shocks of rutted, bumpy ground, too; rollers and races are case-hardened, to give a hard, wear-resisting surface over a tough, shock-resisting core.

Because no bearing can be better than its steel, we make the steel for Timken bearings ourselves. It's the only way we can be sure it will be good enough.

For the least friction, the least maintenance, and—in terms of performance—the least cost, always specify the bearings with the trademark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



How INTERNATIONAL HARVESTER mounts the wheels of its B170A scraper on Timken bearings to insure dependability, long life. The International Harvester TD-24 tractor also uses Timken bearings on the main drive sprockets and front idlers.

OUR OWN NICKEL-RICH ALLOY STEEL MAKES TIMKEN BEARINGS TOUGHER

Nickel makes steel tougher. And we don't skimp on nickel in the fine alloy steel we make for Timken bearings. Our steel-making specialists use the exact amount to give Timken bearings the toughness they need to withstand shock, last longer. We control the quality of Timken bearings at every step in production—from melt shop through final bearing inspection.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

NOT JUST A BALL ◯ NOT JUST A ROLLER ⊂⊃ THE TIMKEN TAPERED ROLLER ⊂⊃ BEARING TAKES RADIAL ◯ AND THRUST —◯— LOADS OR ANY COMBINATION —✳—

For more facts, use Reader-Reply Card opposite page 18 and circle No. 246

AVOID LEGAL PITFALLS

Owner not held for injury caused by known hazard

THE PROBLEM: *A contractor's employee was injured while unloading structural steel at a job site when cables attached to the 45-foot boom of a crane were swung too close to high-voltage electric wires 36 feet above ground. Was the owner of the premises, who had previously warned the contractor against the danger of the wires, liable to the injured man?*

THE ANSWER: No. (Schwartz v. General Electric Realty Corp., 126 N. E. 2d 906, decided by the Ohio Supreme Court.)

The court applied the generally recognized rule of law that an owner of premises who engages an independent contractor, is bound to maintain the premises in a reasonably safe condition. However, this duty does not extend to protection against hazards that arise out of the character of the work to be done.

Bond did not cover power-shovel rent

THE PROBLEM: *As required by Pennsylvania law, a state-highway contractor's bond secured payment for "all material furnished and labor supplied or performed in the prosecution of the work, whether or not the . . . material or labor enters into and becomes a component part of the work". Did the bond cover unpaid rental for use of a power shovel leased to the contractor?*

THE ANSWER: No. (Commonwealth v. Pavia Co., 113 Atl. 2d 224, decided by the Pennsylvania Supreme Court.)

The court referred to cases in which it previously had decided that "material" did not include machinery, tools, or appliances used to facilitate construction, and that a claim for rental is not a "labor claim".

For more facts, circle No. 248 →

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Measuring damages for delayed completion

THE PROBLEM: *A contract called for land to be leveled for a drive-in theater. Did a delay in completion beyond agreed time limit, entitle the owner to damages based upon loss of anticipated profits in operating the theater?*

THE ANSWER: No. (Evergreen Amusement Corp. v. Milstead, 112 Atl. 2d 901, decided by the Maryland Court of Appeals.)

The court applied a rule of law followed by courts generally: damages for loss of profits of a business that has not gone into operation are too conjectural to be allowable in such cases. It is only when a business has been operating long enough to enable estimating lost profits with some degree of certainty that such an award can be made.

The court said that in this case damages could not exceed fair rental value of the land during the period of delay, plus actual money losses, exclusive of anticipated profits, caused by the delay.

Partnership is required to be licensed as such

THE PROBLEM: *Under California law, could a contracting partnership not licensed as such, or its assignee, enforce a subcontract against a general contractor or its surety, even if one member of the firm was licensed?*

THE ANSWER: No. (Flickinger v. Swedlow Engineering Co., 284 Pac. 2d 521, decided by the California District Court of Appeals, Second District—Los Angeles).

The court drew a distinction between this case and one decided by the California Supreme Court in which each of two contractors held individual licenses and a joint license was obtained while the work was being performed.

It is clear that on the basis of previous licensing decisions, it is risky to assume that a partnership can operate on individual licenses held by its members when the particular licensing law provides for licensing partnerships.

Policy did not cover damage to structure

THE PROBLEM: *The general contractor on a municipal water-supply project sublet concrete work, including a spillway retaining wall. The wall was completed, approved, and paid for. While the general contractor*

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TRACTION CAP TREADING

You get all these
Cost-Cutting Advantages

- **QUICK SERVICE**—Treading done in the field at strategically-located points.
- **BIG SAVINGS**—Save up to 74% of the new tire cost.
- **NO WASTE**—New rubber is applied only to worn tread area of tire—original shoulders are maintained. Heat is applied only to tread rubber.
- **INCREASES TIRE LIFE**—More hours per tread, more treads per tire.
- **ROCK GRIP TREAD DESIGN**—A proved new tire tread design made with special cut-resistant rubber. Gives greater traction, greater driver control, more hours of service and less side-slipping.
- **GUARANTEED**—Free from defects in workmanship and materials.

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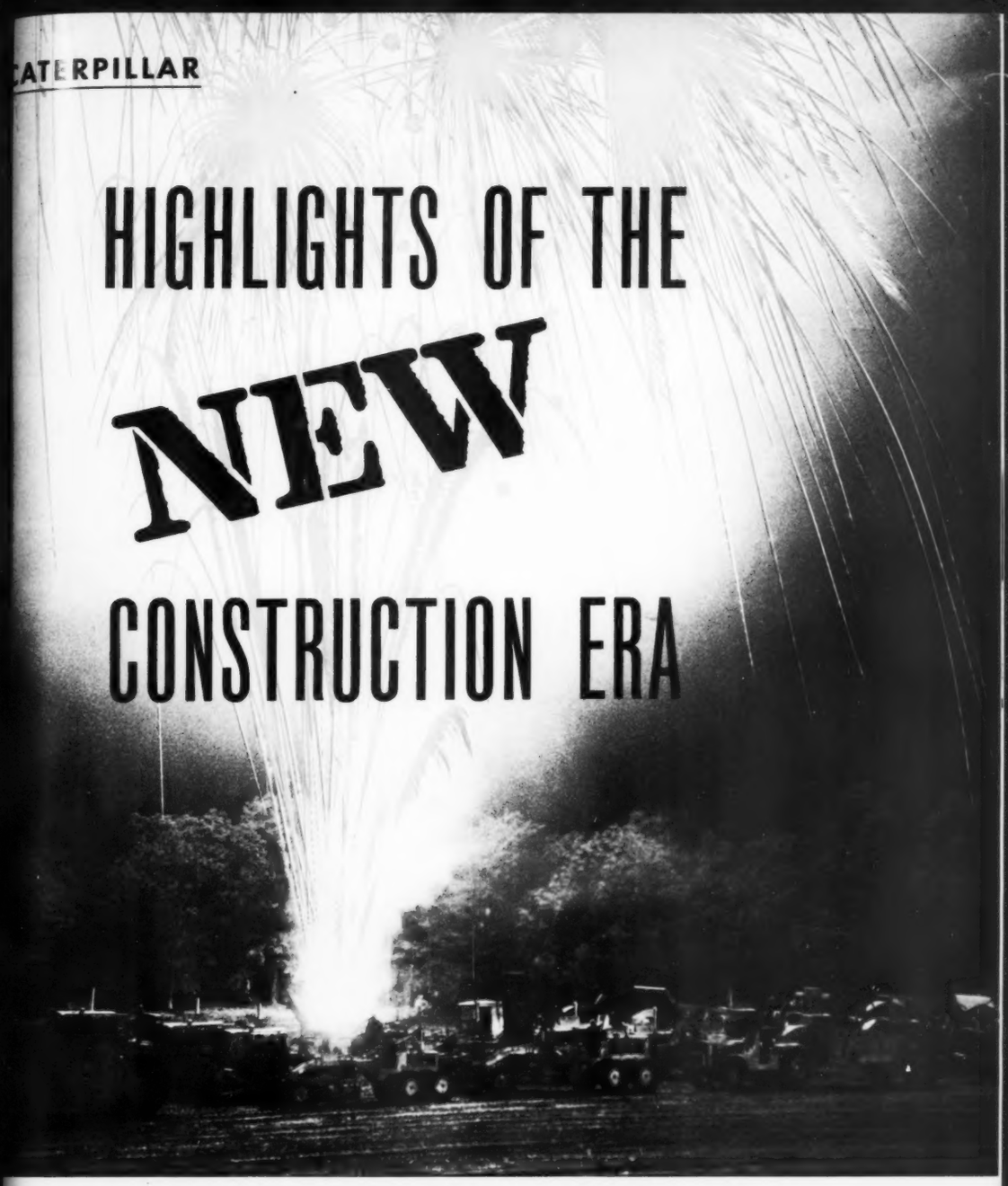
For more facts, use Reader-Reply Card opposite page 18 and circle No. 247

CATERPILLAR

HIGHLIGHTS OF THE NEW CONSTRUCTION ERA



Never before in history has the equipment industry faced such a tremendous challenge as today. We are entering what might well be called the "construction era." Right now construction is the greatest single factor in our industrial economy, employing 12% of our total labor force. And construction can never move forward by itself. Its progress is dependent upon increased production in mines and forests, cement mills and steel plants. Caterpillar Tractor Co. is matching these new opportunities with an array of new products that will increase production, cut maintenance costs, work longer and more profitably than any other equipment on the market. These Caterpillar-built products are the result of continuing research in the laboratory and in the field. They are forceful evidence of Caterpillar Leadership in Action. See them on the following pages.

NEW in track-type tractors!

The new D9

This new giant is a bear for work. Choice of torque converter or exclusive oil clutch drive. First track-type tractor with Turbocharger. Completely new 286 HP engine. "Live-shaft" drive for rear-mounted equipment. Many other important features.

The new D8

With torque converter (Series D) or direct drive (Series E). Completely new 191 HP engine. "Live-shaft" drive for rear-mounted equipment independent of flywheel clutch. New easy controls. Many other improvements. Shown with new Cat No. 463 LOWBOWL Scraper.

The new D7 (Series C)

New 128 HP engine. Drawbar pull 28,700 lb. maximum. Exclusive oil clutch. Finger-tip steering. New starting engine for easier operation. Track shoes hardened by "*water quench*" process (also on D8 and D9). Many other important advances.

LEADERSHIP IN ACTION

No. 955—1 1/2-yard capacity

Balanced for bigger production at lower cost. Major features: 40-degree bucket tip-back at ground level, new oil-type clutch, convenient lift and dump levers, modern hydraulic system, high reach, "designed in" operator comfort, optional starting and versatile attachments.

NEW in Traxcavators!

No. 933—1-yard capacity

Like its bigger brother, *balanced* to outproduce ordinary tractor-shovels of equivalent capacity. Also backed by *one* manufacturer to provide you the advantages of single manufacturing responsibility and one service source. Major features—same as the No. 955!

LEADERSHIP IN ACTION

NEW in wheel-type tractors!

The new DW21 Tractor ▲

(Series C.) New 300 HP Caterpillar Engine with Turbocharger. 10% more rimpull. New No. 470 LOWBOWL Scraper. 18 cubic yards struck, 25 cubic yards heaped capacity. New, wide-section 29.5-29 tires give big-footprint flotation and maximum traction. Many other new, thoroughly tested features.

The new DW15 Tractor ▶

(Series C.) 186 HP valve-in-head Caterpillar Engine. Speeds up to 24 MPH (31.3 MPH with optional gears) pulling loaded wagon or scraper. Heavy-duty clutch has air booster. Air brakes. Wide range of speeds: 10 forward, 2 reverse.

The new DW20 Tractor

(Series E.) Shown with new No. 456 LOWBOWL Scraper. This great new team highballs up to 32.1 MPH for fast cycle times. Same 300 HP engine with Turbocharger and wide-section tires as DW21. LOWBOWL design loads more material in less time by using tractor and pusher power at maximum efficiency.

LEADERSHIP IN ACTION

NEW in pipelayers!

The new No. 583

Here, for the first time, is a pipelayer that is *all* pipelayer—not a tractor attachment. It's the most efficient, highest capacity pipelayer in history. Lifting capacity of 130,000 pounds and 21-inch clearance. Three-stage torque converter in main drive and new hydraulically actuated counterweights. Stability is unequalled. A heavy-duty constant-mesh pipelayer winch transmission drives directly from the engine. Many more important advances, all designed to produce more profits for pipeliners.

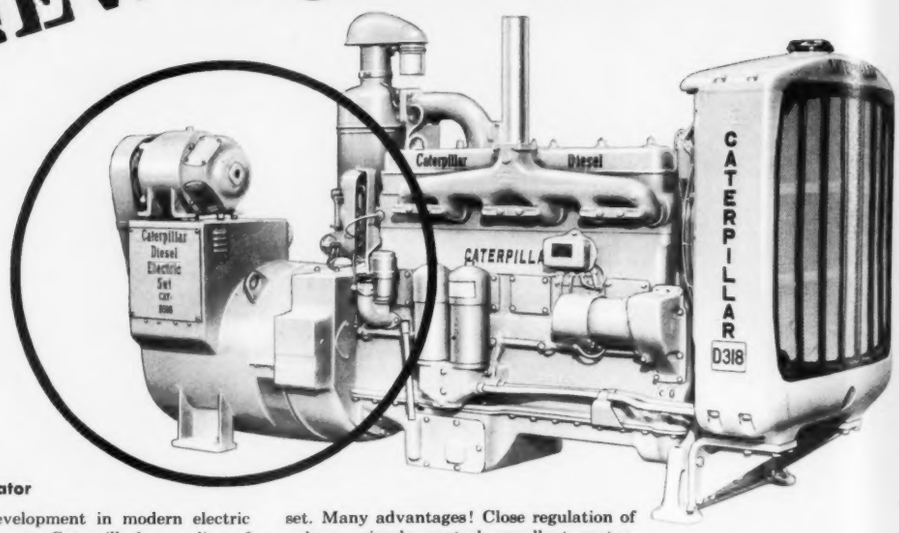
NEW in motor graders!

The new No. 12 with oil clutch

With the addition of the job-proven oil clutch, the big, versatile No. 12 Motor Grader gives you more economy and efficiency than ever. The new clutch increases work life since the constant oil bath lubrication reduces wear on all moving parts. There is less maintenance; 1500 hours without adjustment is not unusual and no external lubrication is needed. The new No. 12 is more efficient because the clutch is constantly cooled, eliminating clutch fade and slippage due to overheating.

LEADERSHIP IN ACTION

NEW in generators!

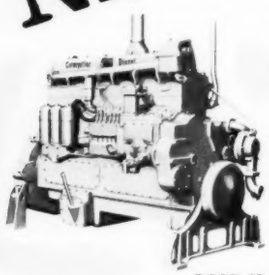


Cat Generator

A major development in modern electric power. Brings to Caterpillar's new line of Diesel Electric Sets the efficiency of the externally-regulated set in a self-regulated set. Many advantages! Close regulation of voltage, simple control, excellent motor-starting ability, easy hook-up with other generators . . . 100% backed by Caterpillar.

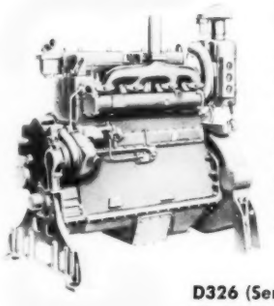
NEW in diesel engines!

D342—210 HP maximum @ 1200 RPM



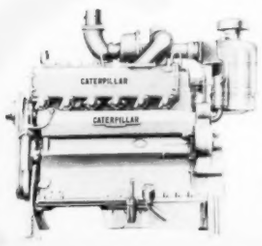
Incorporates the latest advances in modern, compact, heavy-duty diesel design. Offers better operation, less maintenance, higher horsepower. Choice of 3 starting systems—air, electric, gasoline. Like all Caterpillar Engines, burns wide range of fuels without fouling.

D339—140 HP maximum @ 1200 RPM



Combines new compactness with greater efficiency, economy and higher horsepower. A modern, heavy-duty 4-cylinder unit with new smoothness of operation. Choice of 3 starting systems. Many other advantages, including full-flow filtering system.

D337 (Series F) with Turbocharger 310 HP maximum @ 2000 RPM



New Turbocharger utilizes exhaust heat to drive supercharger, delivers air in proportion to engine's need. New hydraulic valve lifters practically eliminate adjustment, provide quiet operation. Greater displacement for more power. Choice of 3 starting systems. Available as Electric Sets and Industrial Engines with complete line of attachments.

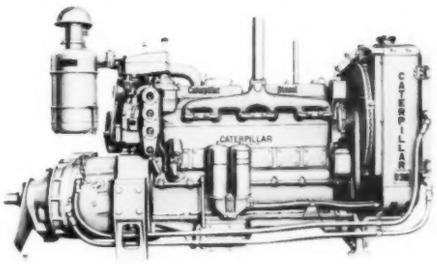
D326 (Series F)—200 HP maximum @ 2000 RPM

Like other new, heavy-duty Cat Diesels, offers you more for your money than any engine in its power range. Many major features, including hydraulic valve lifters and full-flow filtering. Greater displacement for more power. Choice of 3 starting systems. Available as Electric Sets and Industrial Engines with complete line of attachments.

LEADERSHIP IN ACTION

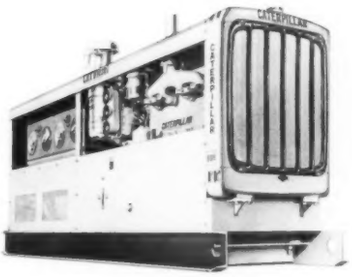
NEW in torque converters!

Caterpillar now offers a wide choice of torque converter power units in standard packages. Torque output is automatically matched to load for smooth load starts or control of load without use of clutch. Overloads can't kill engine. Your Caterpillar Dealer can supply these units. He also has full facilities and parts for service.



NEW in welders!

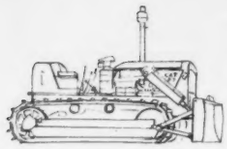
The new Caterpillar Twin Arc-Welder provides one engine, one base, and TWO 300-ampere welding generators. Four-cycle Cat Diesel picks up load instantly without missing or injector trouble. Compact design cuts transport and maintenance cost. Operators can weld at different voltages at same time. Single (3 KW) exciter cuts weight and size, provides ample excitation plus plenty of 115-V. DC for auxiliary tools.



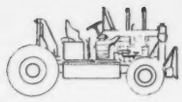
NEW in portable electric sets!

Cat Portable Electric Sets are now available in nine models, 30 to 315 KW, and in all usual voltages, 50 to 60 cycle. They're complete units with cooling system, fuel tank and switchgear, mounted on skids, semi-trailer or full trailer. Easy to hook up and operate, ready to work anywhere.

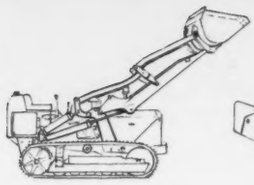
LEADERSHIP IN ACTION



TRACK-TYPE TRACTORS

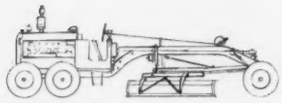


WHEEL-TYPE TRACTORS

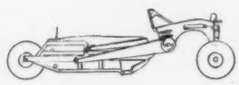


TRAXCAVATORS

PIPELAYERS

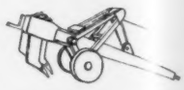


MOTOR GRADERS

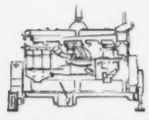


SCRAPERS

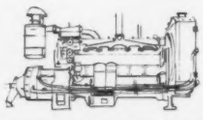
BULLDOZERS



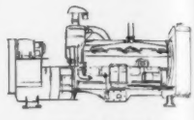
RIPPERS



INDUSTRIAL ENGINES

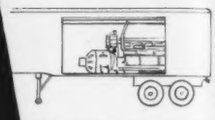


TORQUE CONVERTERS

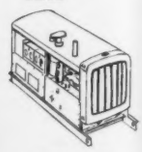


GENERATORS

FOR YOU CATERPILLAR LEADERSHIP PROVIDES THE MOST COMPLETE LINE IN THE INDUSTRY



PORTABLE ELECTRIC SETS



WELDERS

Year after year you have seen the results of Caterpillar leadership. It is always in action. It never stands still. The full resources of Caterpillar research, both in the laboratory and right in the field with you, are constantly devoted to improving products and developing new ones. This means that Caterpillar is your partner in progress, bringing you better and better products, greater opportunities for profitable work. Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

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LEADERSHIP IN ACTION

PRINTED IN U. S. A.

was backfilling, an employee ruptured the wall with a bulldozer. The general contractor's policy insuring against liability contained a clause that made the policy inapplicable to damage to property in the "care, custody, or control" of the contractor, and the general contract provided that, although material and work covered by partial payments should become the property of the owner, the general contractor should be responsible for its care and protection. Was the insurance company liable to the contractor?

THE ANSWER: No. The wall was in the "care, custody, or control" of the insured contractor. (L. L. Jarrell Construction Co. v. Columbia Casualty Co., 130 Fed. Supp. 436, decided by the United States District Court, Southern District of Alabama.)

United States District Judge Thomas said that he reached this conclusion reluctantly because the policy was so worded that it afforded the general contractor little, if any, protection.

Cost-plus account must be itemized

THE PROBLEM: *In a suit on a cost-plus building contract involving about $10,000, the contractor lumped several items into one. Millwork, lumber, carpenter labor, hardware, nails, screws, and paving labor amounted to $614.80. For lack of specific proof, was that sum, plus the 10 per cent profit on it, disallowed?*

THE ANSWER: Yes. (Wendel v. Maybury, 75 So. 2d 379, decided by the Louisiana Court of Appeals, New Orleans.)

The court said a cost-plus contract implies that "the price charged will not be whatever the contractor sees fit to charge, but whatever may be shown to be the reasonable and proper cost". He must itemize the various expenditures for which he claims credit.

Federal withholding taxes—priorities

THE PROBLEMS: (1) *Does the ordinary contractor's performance and payment bond make the surety liable if the contractor fails to pay federal withholding and unemployment taxes?* (2) *Under Louisiana law, do statutory liens of material men who furnish materials to public-works contractors come ahead of such federal taxes if the lien claims are recorded before the federal government files its lien claims?*

THE ANSWERS: (1) No. (2) Yes. (Great American Indemnity Co. v. United States, 120 Fed. Supp. 445, decided by the United States District Court, Western District of Louisiana, Alexandria Division.)

Contractors held liable for accident on trench

THE PROBLEM: *In connection with a plumbing job, a building subcontractor undertook to excavate and refill a trench in a street. Because of insufficient refilling and failure to erect proper warning to travelers, a city fireman was thrown from a firetruck and seriously injured. Were the subcontractor and a plumbing subcontractor, who had obtained a municipal permit to excavate, jointly liable to the injured man?*

THE ANSWER: Yes. (Bressingham v. City of New York, 138 N. Y. Supp. 2d 57, decided by the New York Supreme Court, Bronx County.)

The court said that a $25,000 damage award was not excessive, considering the nature of the injuries sustained by plaintiff.

Lien rights when contract has been terminated

THE PROBLEM: *A contract to construct a drive-in theater was terminated by mutual agreement after it had been partly performed. Under Arizona statutes, was the contractor entitled to the reasonable value of the labor and materials furnished and not merely to their actual cost?*

THE ANSWER: Yes. (Parker v. Holmes, 284 Pac. 2d 455, decided by the Arizona Supreme Court.)

NLRB has jurisdiction of interstate commerce case

THE PROBLEM: *A contracting company engaged in Kansas in constructing a federal government dam, which involved interstate commerce, sued in a state court to enjoin a labor union from picketing the job site. Did the National Labor Relations Board have jurisdiction of the case to the exclusion of the Kansas courts?*

THE ANSWER: Yes. (Texas Construction Co. v. Hoisting & Portable Engineers Local Union 101, A. F. L., 286 Pac. 2d 160, decided by the Kansas Supreme Court.)

The suit was dismissed.

Builder bore risk of soil conditions

THE PROBLEM: *The builders of a house undertook the job without being assured of the nature of subsurface conditions. Before completion of the work, cracks developed in the foundation and walls, due to presence in the soil of concentrated calcium carbonate. Impliedly recognizing responsibility, the builders tried to solidify the soil by chemical treatment, and they underpinned the foundation. But the*

Why Did Contractors use Armco Structures FOR THESE EXPRESS HIGHWAYS?

Of course, the Armco Corrugated Metal Drainage Structures met specifications. But the main reason was that the contractor found Armco Structures more advantageous to install.

These advantages are usually expressed in terms of lower cost. And there are many ways in which a contractor can save money, cut labor costs, and speed work. Below are typical reasons why Armco Structures permit contractors to bid low and retain ample profit. It will pay you to investigate Armco Structures for your next job.

- ☐ MATERIAL COSTS ARE LOW
- ☐ SMALL CREW HANDLES EVERYTHING
- ☐ BOLTED ASSEMBLY SPEEDS WORK
- ☐ BAD WEATHER WON'T STOP JOB
- ☐ NO HEAVY EQUIPMENT NEEDED
- ☐ 49 ARMCO PLANTS SIMPLIFY DELIVERY

Armco Drainage Structures, supplied in a wide range of sizes, are available as: Standard Corrugated Metal Pipe and Pipe-Arch (also supplied as ASBESTOS-BONDED and PAVED-INVERT); Armco MULTI-PLATE Pipe, Arch and Pipe-Arch. Write us now for more data. Armco Drainage & Metal Products, Inc. 4125 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

NEW YORK THRUWAY 10′ diameter Armco MULTI-PLATE Pipe

GARDEN STATE PARKWAY 10′ diameter Armco MULTI-PLATE Pipe

OHIO TURNPIKE 5′ and 9′ diameter Armco MULTI-PLATE Pipe

WEST VIRGINIA TURNPIKE 42″ diameter Armco ASBESTOS-BONDED Pipe

TURNER TURNPIKE Quadruple 14′ diameter Armco MULTI-PLATE Pipe

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ARMCO DRAINAGE STRUCTURES

Other Armco Products include: Steel Buildings • FLEX-BEAM Guardrail • Retaining Walls • Sheeting • Liner Plate • Welded Steel Pipe • Bridge Plank • Pipe Piling and Pile Shells

For more facts, use Reader-Reply Card opposite page 18 and circle No. 249

walls continued to crack. Were the builders liable for the resulting damages to the structure?

THE ANSWER: Yes. (Newcomb v. Schaeffler, 279 Pac. 2d 409, decided by the Colorado Supreme Court.)

The decision was based largely upon the court's finding that the builders had negligently failed to use proper methods to correct the soil condition. But the court also relied upon a general rule of law, as stated by the Washington Supreme Court, that if a builder "wishes to protect himself against the hazards of the soil, the weather, labor, or other uncertain contingencies, he must do so by his contract." (White v. Mitchell, 123 Wash., 630, 213 P. 10, 12.)

In a New Jersey case, the Court of Errors and Appeals decided that an unconditional contract to erect a structure on a particular site binds the builder to "provide such substruction as will sustain the building upon that spot until it is complete and delivered to the owner. If he agrees to erect a house upon a spot where it cannot be done without driving piles, he must drive them, because he has agreed to do everything necessary to erect and complete the building." (Superintendent and Trustees of Public Schools v. Bennett, 27 N. J. L. 513, 72 Am. Dec. 373.)

Or, as stated by the Pennsylvania Supreme Court, "there is no implied warranty" by the owner "of the sufficiency of the soil to support the building to be erected, and the contractor assumes the risk of loss incident to such defectiveness." (Cramp & Co. v. Central Realty Corp. 268 Pa. 14, 110 Atl. 763, 765.)

The Colorado court also mentioned a case decided by the United States Supreme Court, where the successful bidder on a dry-dock project relied upon a profile plan which showed stable soil. But the accepted bid was to construct the dock "on an available site to be provided by the government", without any reference to a specific site or specification as to underlying soil. It was decided that the contractor had no valid damage claim on encountering quicksand. (Simpson v. United States, 172 U. S. 372, 19 S. Ct. 222, 43 L. Ed. 482.)

The law on this subject is not to be confused with that applying to defects in plans and specifications which the contractor has neither prepared nor guaranteed. There are many decisions to the effect that he is not liable for defects in the work due to faulty plans, particularly when the fault is not apparent or easily detected.

Curb on municipal power to restrict building

THE PROBLEM: *A New Jersey borough ordinance required that application for a building permit be in writing and accompanied by plans and specifications. There was no ordinance against construction of a row of houses, but a permit was denied on the technical ground that there was no written application and no filing of plans and specifications. Admittedly, the permit would have been denied had there been written application and filing of plans, because the construction might interfere with possible future municipal planning for disposal of street surface drainage. Was the applicant entitled to a court order, permitting filing of proper application and plans and specifications and requiring grant of the permit?*

THE ANSWER: Yes. (Antonelli Construction, Inc., v. Milstead, 112 Atl. 2d 608, decided by the New Jersey Superior Court, Law Division.)

The court applied a fundamental rule of law that municipal authorities cannot arbitrarily refuse to issue a license or permit. The power must be reasonably exercised under rules operating uniformly for all applicants.

Ambiguous contracts

THE PROBLEM: *A contract called for laying concrete slab "as per plans". There were original and modified plans. Was oral testimony receivable in court to prove which plans the parties had in mind?*

THE ANSWER: Yes. (Cordas v. Wright, 277 Pac. 2d 520, decided by the Appellate Department, California Superior Court, San Diego County.)

At the Denver water dam one hose takes the place of many...

The immense water-supply dam just completed for the city of Denver, Colorado, required over 8,000 feet of air hose in its construction.

The experienced contractor who handled the job picked U. S. Royal Cord Air Hose for several hard-boiled reasons:

(1) U. S. Royal Cord Air Hose not only handles air—but also *water—and water under the extreme pressures required in washdown.* He used the hose on vibrators to consolidate the concrete—he used it as part of cooling lines on face of dam—on pneumatic tools, on sump pumps and sludge pumps, rock drills, chipping hammers, air wrenches.

(2) The contractor found there was no need to go easy on U. S. Royal Cord. *No* need for cribbing, no time wasted by workers in selecting or storing away special hose for special jobs. *No money tied up in stocking specialized hose.*

(3) Valuable pay hours saved—hour after hour, week after week. U. S. Royal Cord is *built like a tire*—that's why it can be kicked around and abused and made to do jobs you don't expect from an air hose.

You can save yourself plenty of worry by standardizing on "U. S." Hose. Performance after performance demonstrates the folly of wasting money on short-lived, cheap hose. You can get "U. S." Hose at any of the 27 "U. S." District Sales Offices.

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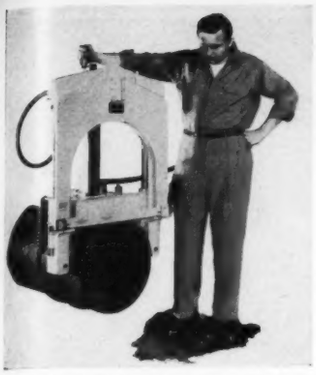


The Big Guillotine power saw cuts up to 16-inch-diameter iron or steel pipe in a few minutes.

Heavy-duty power saw cuts pipe on the job

■ The Big Guillotine, a new large-capacity power pipe saw, cuts cast iron or steel pipe up to 16 inches in diameter easily and quickly, according to the manufacturer, the E. H. Wachs Co. A special feature of this saw is that it may be used right on the job, requiring a space only 32 inches to cut a 16-inch-diameter pipe.

A double-chain pipe vise clamps the saw to the pipe, and the machine is ready to cut in a matter of seconds. A machined cast-steel V saddle base is said to assure a square cut at a right angle to pipe. The pipe acts as a machine tool base.

Easier, faster, and more accurate cutting under practically all conditions is claimed for the Big Guillotine by the manufacturer. Pipe is cut in a matter of minutes—16-inch cast-iron pipe in 16 minutes—16½-inch extra-heavy steel pipe in 20 minutes.

For further information write to The E. H. Wachs Co., 1525 N. Dayton St., Chicago 22, Ill., or use the Request Card that is bound in at page 18. Circle No. 31.

For more facts, circle No. 252

THERE'LL BE NO WORK for the cleanup man when this Hobbs Schonrock 12-yard cable dump trailer finishes dumping its load of hot-mix material to the hopper of the Barber-Greene finisher. The addition of an extended rear skirt and side wing plates makes the cable-dump trailer an ideal feeder for the finisher, and a simple hitch between trailer and finisher gives the operator of the latter complete control over both machines. Because these big cable-dump trailers have a much greater capacity than dump trucks, their use in this operation is expected to cut road-surfacing costs appreciably. For further information write to Hobbs Mfg. Co., 609–623 N. Main St., Fort Worth 1, Texas, or use the Request Card at page 18. Circle No. 179.

This cattle pass, on the Gales Creek Section of Oregon's new highway project, is one of many units fabricated of Beth-Cu-Loy galvanized steel culvert stock by Beall Pipe and Tank Corp., Portland.

What other culvert material matches these Beth-Cu-Loy advantages?

For culverts and other sub-drainage requirements, road builders have long recognized the value of copper-bearing, galvanized steel pipe. Beth-Cu-Loy galvanized-steel culvert stock, made of copper-bearing steel, easily meets the rigid standards of the AASHO and offers a combination of advantages hard to beat.

Drainage pipe made of Beth-Cu-Loy is strong, yet light enough to be handled easily in long lengths. It is durable enough to withstand the impact and vibration of modern traffic. Flexible enough to simplify alignment and grade maintenance. It stands up under the action of freezing and shifting soils, and reduces root hazard. The copper content gives proven corrosion-resistance to the basic steel, which is further protected by its 2-oz coating (triple spot test).

Bethlehem does not fabricate culvert pipe, but does produce Beth-Cu-Loy galvanized steel stock, in gages 8 through 16, for those who do fabricate it. For names of fabricators in your area, just drop a line to the nearest Bethlehem office.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

For more facts, use Reader-Reply Card opposite page 18 and circle No. 253

The new Henderson Krawloader mounts on John Deere 40-C tractors.

New front-end loader for low-clearance work

■ A new compact front-end loader for use on the John Deere 40-C tractor is offered by the Henderson Mfg. Co., Inc.

Designed for low clearance, the new Krawloader features a rugged box-section main frame and double-action cylinders with V-packing and chromed rods. A powerful front-mounted vane-type hydraulic pump, auxiliary relief valve, oil filter, and control valves, are also standard equipment. A heavy reinforced self-leveling bucket cradles the load.

The rigid yoke is V-block-attached to axle bars. Ballast box beams with attached fenders are removable to allow servicing of the tractor drive mechanism. The close-coupled ballast box has a hinged top. A full protective grill guard, high-pressure wire braid hose, oversize linkage, and pivot points are other outstanding features.

The Henderson Krawloader is available for 46-inch-gage, 12-inch-maximum track shoes, and for 44-inch-gage, 10-inch-maximum shoes.

For further information write to Henderson Mfg. Co., Inc., 1203 Rockford Road S. W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 4.

Bucket maintenance

■ Practical help for clamshell-bucket operators is graphically presented in a new Blaw-Knox publication reported to be the most comprehensive maintenance guide ever issued by any bucket manufacturer. The booklet contains 40 pages of illustrations and carefully indexed information on such points as the use of counterweights for maximum efficiency, bucket reeving, cable life, and welding procedures for building up worn parts.

Other items include a list of common abuses leading to early bucket failure, and proper lubrication practices. Buckets are broken down by diagram into component parts for detailed explanation of maintenance procedures.

To obtain Bulletin 2373-R write to The Bucket Dept., Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh, Pa., or use the Request Card that is bound in at page 18 of this issue. Circle No. 40.

Aluminum jackets protect pilings from corrosion

Test installations of aluminum jackets for pilings have proved to be resistant to corrosion from marine growth and salt water. The jackets, installed on pilings in Texas, New Jersey, and Florida, are expected to add 20 years to the life of a pile.

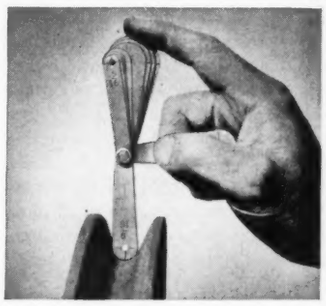
The piling jackets installed at Galveston, Texas, were manufactured by Childers Mfg. Co., 3620 W. 11 St., Houston, and placed by Tellepsen Construction Co., under a U. S. Navy contract. The casings are made of 0.051-inch-thick Alcoa 5050 aluminum coiled sheet and are fabricated in half cylindrical sections about 5 feet long. These are placed around the pilings and locked together to

A corrosion-resistant aluminum jacket is installed around a pier. The jacket will protect the wooden piling from marine organisms and sea water.

Tuffy tips on choosing the

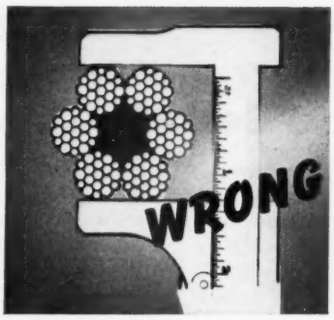
Measure Groove Diameter Accurately

Shown above is the WRONG way to measure the groove diameter. The result—shorter life of the wire rope you buy. Note that only the sides of the rope will bear on the sheave. In a relatively short time this will squeeze the rope out of round and set up destructive friction and stresses on the rope strands and wires. New rope is oversize and diameter of grooves on sheaves and drums should be slightly larger.

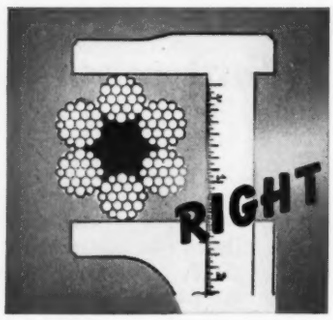


Shown above is the *CORRECT* way to measure the groove diameter. It is a simple thing to do and will give the rope you buy a chance to deliver all the service it possibly can. Remember a wire rope is composed of many closely correlated working parts and sheave grooves which are too large or too small throw them out of alignment. Just like any other working part on a machine, wire rope cannot do its best if it is misfitted.

If Present Rope Is Correct Size, Measure with a Caliper



Measuring the Wrong Diameter is a common mistake that some buyers make when they order replacement rope. When the rope arrives, it turns out to be too small—even though a machinist's caliper was used to assure accuracy. It's an easy mistake to make, but it's just as easy to remember the *right* way and be sure you get the right size rope. Otherwise both the safety factor and service life of the rope will be reduced.



Measuring the Right Diameter is the simple step shown above. Measure so that a single strand is on each of the adjustable edges of the caliper—*not* two strands that measure as a flat side. The actual diameter of a wire rope is the same as that of the circle required to circumscribe it. The diameter of a wire rope is an important factor in determining the safe working load to be handled by your equipment.

Replace Worn Sheaves

When Replacing Rope, check for sheaves that have been badly worn. Sheaves that have grooves corrugated by the rope lay impression should be replaced immediately before installing new rope. Since rope creeps to a certain extent on sheaves these grooves can actually cut the strands as the rope runs over. This will greatly reduce service life of *any* wire rope.

form the protective covering.

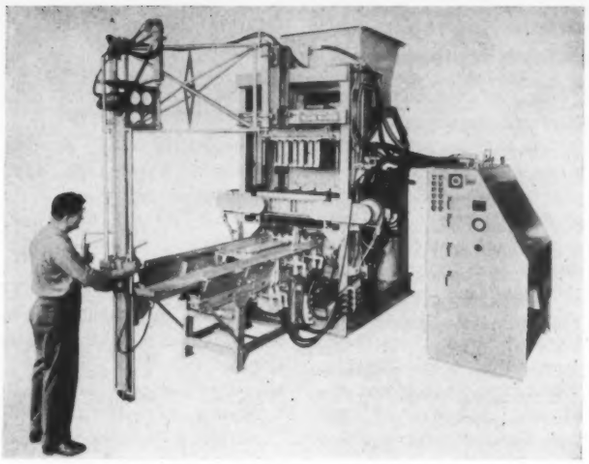
Each section has stovepipe-type crimping at the end so that the lengths can be joined without screws or other fastenings. Locking strips overlap the joints to provide continuous strength and spacer clips assure proper spacing between the aluminum and the piling.

Concrete-block machine features simple design

■ A new fully automatic concrete-block machine announced by Multipack, Inc., handles all aggregates and makes all types and sizes of 4, 6, and 8-inch-high blocks. The machine is designed to produce up to 5 cycles (approximately 900 blocks) per hour. Automatic controls, located in a separate cabinet, are said to assure accuracy and permit fast, safe, one-man operation.

Hydraulically powered for smooth positive performance at low pressures, the Blockmaster 3 is said to have fewer operating parts than any other block machine on the market. This simplified design and low-pressure operation reportedly assure continual peak production with minimum maintenance.

The new machine features an air-operated two-stage magnetic offbearer, dual vibration of mold boxes to assure dense packing of aggregates, new interchangeable agitator shafts, removable inserts for quick change in block type, a fully-automatic front-end loader that feeds pallets directly into the front of the machine, and a new bottom-drop hopper design that permits easy cleaning of the hopper as well as quick removal of mixes.



The Multipack Blockmaster 3 produces a variety of sizes and types of 4, 6, and 8-inch concrete blocks.

For further information write to Multipack, Inc., 7422 Grand Division Ave., Cleveland 25, Ohio, or use the Request Card at page 18. Circle No. 188.

right replacement Rope

Beware of Critical Tread Diameters

It is highly important to accurately measure the tread diameter of the smallest sheave or drum on any machine. Here's why. It is on this sheave or drum that the wire rope will get the greatest wear. Some constructions of wire rope will work on smaller tread diameters than others without lessening their service life. Engineers have determined the critical tread diameter for different constructions as shown in the table at the right. Also shown in the table is the minimum recommended tread diameter which is 50% larger than the critical tread diameter.

Example, the tread diameter of your smallest sheave is 24 inches. You know that a 1-inch rope is necessary. Referring to the table at the right you see that the 6 x 19 Warrington or Filler wire is suitable because the minimum tread diameter recommended for it is 24 times the diameter of the 1-inch rope. This gives you a margin of 50% over the critical diameter of 16 inches. If flexibility is a factor in the operation then you would choose the Filler wire type of rope with fiber core.

Construction of Rope	Critical Tread Diameter	Minimum Recommended Tread Diameter
6 x 7	28	42
18 x 7	24	36
6 x 19 Seale	20	30
6 x 19 Warrington or Filler Wire	16	24
6 x 31	15	22
8 x 19 Seale	14	21
6 x 37	12	18
8 x 19 Warrington or Filler Wire	12	18

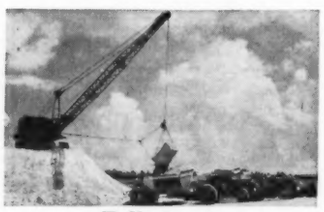
To arrive at critical tread diameter and minimum recommended tread diameter multiply the numbers above by the rope diameter.

Use The "Know How" of Wire Rope Specialists

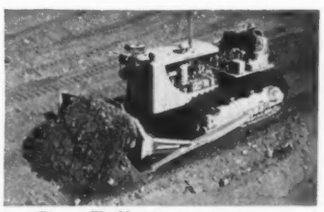
Stemming from many years of cooperation with users and machine builders mastering wire rope problems, is a family of special ropes for special purposes. Into each is incorporated the rope construction, the grade of steel and operating characteristics found to be best for the service for which each is intended.

When you specify one of the Tuffy Wire Ropes, you can say Tuffy and forget complicated specifications!

Tuffy Scraper Rope
It's flexible enough to withstand sharp bends, yet stiff enough to resist looping and kinking when slack. Save wasting sound rope—mount a reel on your scraper.



Tuffy Dragline
Constructed to give you maximum abrasive resistance with extra flexibility. Rides smoothly on grooves, hugs the drum when casting for full load.



Tuffy Dozer Rope
Increases service life . . . reduces down-time. 150' reels mounted on your dozers lets you cut-off worn sections without wasting good rope. 1/2" and 9/16" diameter.

Tuffy Slings and Hoist Line
Tuffy Hoist Line, a longer running rope on all types of hoists. Slings of 9-part machine-braided wire fabric. Kinking or knotting will not materially damage fabric.

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He's the man who can help you find a fast answer to all your wire rope problems. He's also the man who often knows as much about some requirements of your equipment as the men who made it. He's the man who's eager to supply the kind of service that will hold your patronage. Feel free to call on him anytime.

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 254

Prefabricated heliports of open steel grating

■ Commercial manufacture of prefabricated all-steel heliports—landing areas for helicopters—has been announced by Dravo Corp.

The Dravo heliport consists of structurally-supported sections of open steel grating that serve as landing and takeoff pads or cushions for helicopters. The open grating and a deflector-pressure surface below it absorb the downwash of the helicopter's horizontal rotor or propeller. Air passages, formed by the foundation pad or the deflector plate below the grating, carry away the excess air churned by the rotor, thus avoiding chops or "bubbles" that could cause a bumpy landing or takeoff.

In the standard heliport for waterways, which the company claims is the most practical and desirable type, the flight deck is made up of sections, each 10×40 feet, with automatic stabilizing provided by pivotly-mounted floats which cushion the impact of landings and takeoffs. Any increase or decrease in weight automatically changes the buoyancy of the heliport and maintains stability.

The floating platform may be anchored in as little as 2½ feet of water, either by a cable from heliport to shore or by a telescoping piling arrangement. The method of anchorage depends upon such factors as shore line, water depth, and tide ranges.

Twenty 10×40-foot sections will build a heliport considered adequate for present-day needs, but the flight deck may be enlarged by simply adding more of the huge connected sections. A ramp for approach from shore to flight deck, of sufficient strength for ordinary passenger vehicles and mail truck traffic, will be part of the floating heliport equipment.

For further information write to Dravo Corp., Fifth & Liberty Aves., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 30.

Steel measuring tapes with unique features

■ Steel measuring tapes with several reportedly unique features are offered by Carlson & Sullivan, Inc. Tapes in the Carlson Star Chief line are ⅜ inch wide and available in lengths of 25, 50, and 100 feet.

These tapes are marked with jet black stud markings on every 16-inch center for convenience in laying out studs. A sturdy end hook and nail hole at exact zero are aids to exact surface measuring. A non-jamming, no-backlash mechanism moves the tape in and out smoothly. The chrome-plated standup case opens easily.

For further information write to Carlson & Sullivan, Inc., Monrovia, Calif., or use the Request Card at page 18. Circle No. 133.

Data on new shovel

■ A descriptive bulletin covering the recently-introduced Lima Type 24 Jobmaster, an excavator with power-shovel capacity of ½ cubic yard and crane capacity of 13 to 15 tons, is available from the Baldwin-Lima-Hamilton Corp. Specifications and illustrations explain the machine's applications as a shovel, crane, dragline, or pull shovel with crawler, wagon, or truck mountings.

To obtain Bulletin 204 write to the Construction Equipment Division, Baldwin-Lima-Hamilton Corp., Lima, Ohio, or use the Request Card at page 18. Circle No. 183.

CONCRETE BREAKING is only one of the many operations performed by the Danuser post driver, which may be tractor-mounted and operated by power takeoff or trailer-mounted for gasoline-engine operation. Delivering approximately 25 200-pound blows per minute, the machine can also be used to tamp backfill and to do a variety of driving operations. For further information write to the Danuser Machine Co., 500 E. Third St., Fulton, Mo., or use the Request Card at page 18. Circle No. 178.

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INSTO-HOT No. 1405 CYLINDER MOUNTED

No. 1405 Cylinder Mounted Salamander when attached to the No. 35 Insto-Gas Cylinder makes a self contained unit, that is easy to carry anywhere. No pressure regulator required. Maximum BTU input over 150,000 per hour.

INSTO-HOT No. 1410 FLOOR-TYPE

No. 1410 Floor-type Salamander is attached to the cylinder by means of high pressure Insto-Gas Hose. No pressure regulator required. Maximum BTU input over 150,000 per hour.

INSTO-HOT No. 1415 WITH AUTOMATIC CONTROLS

No. 1415 Salamander is equipped with 100% safety shutoff valve with Thermo-pilot (AGA Approved Controls). The New No. 1415 has a pressure regulator mounted on the Salamander which makes it unnecessary to have cylinder near by. Perfect operation with over 50' of hose is assured. Maximum BTU input 100,000 per hour.

Recommended for use with all three Insto-Hot Salamanders — the unique INSTO-GAS No. 35 — a large capacity cylinder engineered for stability, portability, safety and long period operation!

Write TODAY for complete information:

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In Canada: W. H. CUNNINGHAM & HILL LTD., Toronto 2, Canada

INSTO-GAS CORPORATION, Detroit 7, Michigan **C&E**

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For more facts, coupon or circle No. 255

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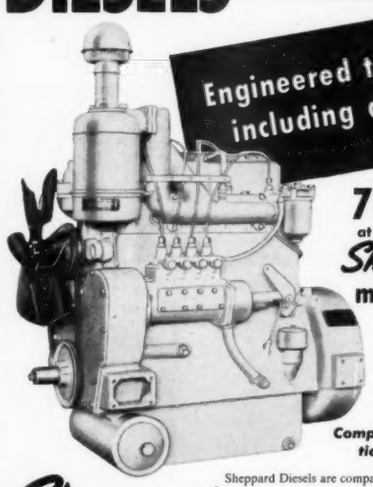

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Sheppard Diesels are compact, easily engineered into existing equipment designs. Exclusive Sheppard simplified fuel injection system requires no special service training or tools making Sheppard Diesels the obvious choice to replace gasoline power as original or optional equipment. Outline your needs today. Let Sheppard help you make the switch to Diesel easily, profitably.

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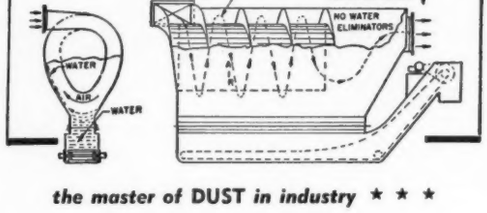
For more facts, use Reader-Reply Card opposite page 18 and circle No. 256

THIS IS THE .... *Air Tumbler*



the master of DUST in industry ★ ★ ★

SIMPLE — DEPENDABLE
NO FIRE HAZARD
HIGH EFFICIENCY
CONSTANT CAPACITY
LOW OPERATING COST

WRITE FOR BULLETIN NO. 531

DUST SUPPRESSION & ENGINEERING COMPANY
P. O. BOX 67 • LAKE ORION, MICHIGAN

For more facts, use Reader-Reply Card opposite page 18 and circle No. 257

New mobile radio units offer better reception

■ Improved sound in mobile radio equipment is offered by Motorola with announcement of its Twin-V line of two-way radio units. Spotlighting the importance of universal operation from either a 6 or 12-volt battery, the new line incorporates innovations improving receiver sensitivity, noise suppression, and voice frequency reproduction.

Better fringe-area reception and consequently greater range—an advantage to contractors using radio on big construction projects—are said to be obtained through the use of new circuits and new tube types to provide increased receiver sensitivity. A new acoustically-designed speaker matches the exterior design of the radio set and control head. The matched speaker enclosure and cone reportedly provide excellent frequency response characteristics which yield improved intelligibility in two-way radio voice reproduction.

For further information write to the Technical Information Center, Motorola Communications & Electronics, Inc., 4501 W. Augusta Blvd., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 115.

Galion starts work on sales display building

Construction of a modern sales display-room building has been started by the Galion Iron Works & Mfg. Co., Galion, Ohio. The one-story brick and limestone building will house the advertising and sales promotion departments as well as the company's sales and service schools.

Approximately 200×100 feet, the new building will include an auditorium, display room, classrooms, offices, clubrooms, and a kitchen.

This new CMC Transcrete truck mixer, the Model 700, has reduced over-all length for greater legal payloads.

New-model truck mixer has 7-yard capacity

■ The first in its 1956 line of Transcrete truck mixers has been announced by Construction Machinery Co. The new Model 700, largest in the CMC truck-mixer line, has a mixing capacity of 7 cubic yards.

A feature of the new Transcrete is its shorter over-all length (15 feet 2 inches), made possible by a new 75-inch-diameter drum and 16-degree slope. This dimension is said to permit larger legal payloads. Other features are CMC's floating drive and outswinging hopper. The mixer has a heavy alloy-steel drum and reinforced drum head construction.

According to the manufacturer, the Model 700 provides the ultimate in fast charging, mixing, and discharging. Designed to mix a 7-cubic-yard batch of any slump, the mixer will haul loads of more than 8 cubic yards.

For further information write to Construction Machinery Co., 447 Vinton St., Waterloo, Iowa, or use the Request Card that is bound in at page 18. Circle No. 25.

Complete striping job offered in package deal

■ A new service designed to relieve highway officials, airport operators, and others of the time-consuming responsibility of supervising striping operations is offered by the Prismo Safety Corp., Huntingdon, Pa.

Prismo's Contract Technician Service offers a professional striping job in a package deal providing crews, equipment, materials, and competent supervisory personnel. The service is said to be ideal for small municipalities or for "one-time" users such as airport managers, parking-lot owners, and industrial-plant operators.

Prismo announces it can provide the service regardless of the client's geographical location.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 44.

Data on hydraulic crane

■ Literature describing its new all-hydraulic truck-mounted H-5 Hydrocrane is available from the Bucyrus-Erie Co. A bulletin detailing the construction and operation of the crane is supplemented by a separate 4-page specification list, and both are contained in a handy compact literature folder. On-the-job photographs illustrate both pieces.

The literature gives complete information on this 9-ton-capacity crane. Such features as its hydraulic system, telescoping boom, and outriggers are all illustrated and described.

To obtain Bulletin H-5-1 write to Bucyrus-Erie Co., South Milwaukee, Wis., or use the Request Card at page 18. Circle No. 39.

Data on foam concrete

■ Mearl Mfg. Corp. has issued a brochure on the Mearlcrete system for making cellular concrete. This system involves preparation of a foam liquid which, when blended into the cement slurry, produces a lightweight foam concrete.

In addition to telling what the Mearlcrete system is and how it works, the brochure illustrates with charts and photographs the advantages of cellular concrete made by the Mearlcrete system. Typical installations, such as its use as tank, pipe, and wall insulation etc., are shown.

To obtain this brochure write to Mearl Mfg. Corp., 153 Waverly Place, New York 14, N. Y., or use the Request Card at page 18. Circle No. 196.

With Fuller Model 10-A-1120 Transmissions in fleet of 23 Autocars, Allegheny Construction Equipment Company is getting more work time, less downtime through the right gear ratios to meet load and grade, with shorter, easier shifts that help provide faster work cycles.

300,000 miles... no transmission downtime

Allegheny Construction Equipment Company of Pittsburgh, Pa., select their trucks and truck components with profitable operation in mind.

Today, a fleet of 23 Autocar dump trucks is rounding out its fifth year for Allegheny Construction. The trucks are powered by 165 hp diesels working through Fuller 10-A-1120 Transmissions. Already, many of the trucks have topped the 300,000-mile mark . . . *with no transmission downtime.*

Allegheny, like other leading contractors in the construction industry, knows the critical importance of having *correct transmission ratios to meet heavy loads and adverse grades . . .* under *severe operating conditions . . . and controlled by short, quick, easy shifts.* They specified Fuller Transmissions to get correct ratios and long life in their Autocars. *That's why more equipment owners and users specify Fuller than any other transmission.*

And that's why with over 110 Fuller models to select from—both semi-automatic and full-manual control—*you'll find a transmission designed to do your job . . . better . . . at less cost.*

Fuller TRANSMISSIONS

FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO, MICHIGAN

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla.

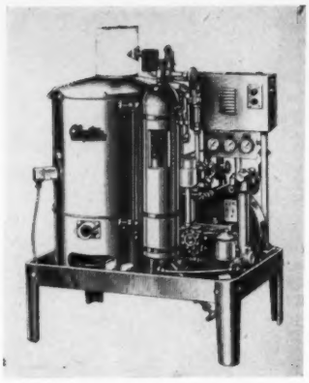
For more facts, use Reader-Reply Card opposite page 18 and circle No. 258

Steam-generating unit features balanced feed

■ A new, low-priced forced-recirculation steam generator, reportedly the first unit of its type to successfully employ balanced feed, is being marketed by Clayton Mfg. Co.

In the Clayton 15-hp generator, cold water is never admitted directly to the coils—a procedure which often reduces the head level of the entire system and induces scale formation. Rather, feed water automatically admitted to the accumulator is preheated and subjected to thermal shock to settle out solids. The result is a flow of preheated, relatively mineral-free water to the coils.

This completely automatic, compact unit is recommended for use where low-cost steam in fairly small amounts is desired. Steam production is balanced with load demands, and automatic controls regulate feed water, the liquid circulating in the coils, and the supply of fuel to the burners.



The new Clayton steam generator.

Four models of the new steam generator are available to meet varying demands.

For further information write to Clayton Mfg. Co., P. O. Box 550, El Monte, Calif., or use the Request Card at page 18. Circle No. 18.

Catalog on tool line

■ Snap-On hand and bench tools ranging from the largest wrenches needed for heavy machinery to precision tools for delicate instruments are described and pictured in a catalog from Snap-On Tools Corp., 8021 28th Ave., Kenosha, Wis.

Information on special tools for repairing diesel and other engines is included, together with data on torque measuring wrenches, pullers, and gear tools.

To obtain this catalog write to the company, or use the Request Card at page 18. Circle No. 181.

New diesel units

■ Two new diesel engines, one rated at 112 horsepower and the other at 171 horsepower, are described in a folder from the Caterpillar Tractor Co. Full specifications are given, and the engines and their component parts are illustrated.

The literature lists the D339 112-hp engine as the same unit that powers the Cat D7 tractor, a 4-cylinder, four-cycle, valve-in-head model said to deliver up to 126 horsepower intermittently. The D342, which powers the Cat D8, is described as a 6-cylinder, four-cycle, valve-in-head unit which delivers up to 190 horsepower intermittently.

To obtain this folder write to Caterpillar Tractor Co., Peoria 8, Ill., or use the Request Card at page 18. Circle No. 86.

Self-propelled roller

■ A brochure picturing and describing the Bros SP-54 self-propelled pneumatic-tire roller has been released by the Wm. Bros Boiler & Mfg. Co. The folder illustrates construction and operational features of the SP-54, and diagrams advantages of this machine. Drive features are treated fully. Complete specifications are given.

To obtain this bulletin write to Wm. Bros Boiler & Mfg. Co., Road Machinery Div., 1057 Tenth Ave. S. E., Minneapolis 14, Minn., or use the Request Card at page 18. Circle No. 42.

BIG HEAD START ON DEADLINE WITH

FOSTER RENTAL STEEL—SHEET PILING

Checking Foundations with 120-Ton Load on H-Bearing Frames Anchored to Foster Piling

Hotel - Department Store - Parking Facility
THE DENVER COLORADO PROJECT

Contractors Webb & Knapp got a *Head Start* on this gigantic project by calling Foster for rental steel-sheet Piling, to complete four sumps (that were holding up the major excavation of this 400-foot square foundation). Foster delivered *on time*, the exact sections and exact lengths of steel-sheet Piling needed to get a head start on work schedules.

Foster 12"x 53 lb. H-Bearing Piles driven an average depth of 50 feet, around perimeter of the gigantic 400 foot excavation.

Whatever You Need in Piling Call L. B. FOSTER for Service

• STEEL-SHEET PILING • H-BEARING PILES
• LIGHTWEIGHT PILING
• PIPE PILES

FASTER from FOSTER

Write for Catalogs C-12

RAILS • TRACK EQUIPMENT • PIPE • FABRICATION

L.B. FOSTER co.

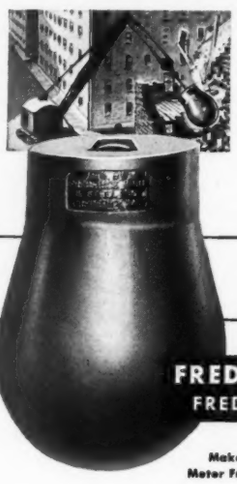
PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

For more facts, circle No. 259

TRUE RUGGED POWER *that keeps costs down*

Frederick

CAST semi-steel DROP BALLS



Get the wrecking power you want *exactly where you want it* with Frederick Drop Balls . . . tough, low cost production tools that stand up under constant punishment, with almost no maintenance. Extra durable nickel alloy is standard in all balls 4000 lbs. or over—or, we'll be glad to quote on special alloys if desired. Frederick's exclusive "Pear-shape" design drops straight—swings true—withstands greater impact . . . "E-Z Swing" steel eye is recessed to give cable protection plus free-swinging action. Balls can be furnished with replaceable pins, if requested. Also available are special release hooks for free dropping.

Wide range of sizes and weights:

Pear shape (lbs.).....	1500	2000	3300	4000	5200	6500	8000
Ball shape (lbs.).....	500	1000	2000	5200			
Spherical shape (lbs.).. (for magnet use)	470	950	1650	2400	3000	3700	5400

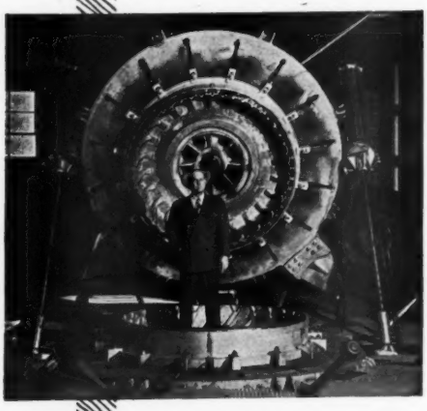
Write us today for prices and illustrated literature. Order Balls direct or from your Equipment Dealer.

FREDERICK IRON & STEEL, INC.
FREDERICK *Established 1890* MARYLAND

Phone MOnument 3-5111

Makers of manhole frames, covers and steps • Storm Gratings
Meter Frames and Covers • Centrifugal Pumps • Gray Iron Castings

For more facts, use Reader-Reply Card opposite page 18 and circle No. 260



THE GENERAL TIRE WITH NEW NYGEN CORD

Only plant in the South equipped to retread tires up through 2700-33. Retreads like new tires at 50% savings.

General's new NYGEN CORD tire has built-in strength. Pound for pound, NYGEN CORD is stronger than steel cables!

Specialists in

BIG TIRE SERVICE
WITHIN 1200 MILES OF CORPUS CHRISTI

You save money when you turn your BIG TIRE troubles over to a BIG TIRE specialist. Specially designed field trucks with power tools, giant hoists and built-in light plants will keep your heavy equipment rolling. Save costly "downtime" by depending on Dickenson to get the job done right and quickly the first time.

CHECK THESE EXTRA FREE ON THE JOB SERVICES

- Complete field service with special equipment
- Fast pickup and delivery within 1200 mile radius
- Periodic inspection on-the-job
- Mount tires
- Rotate tires when necessary
- Furnish "loaners" while doing your retreading.

Dickenson dependable service is backed by 25 years experience. Let us show you how our plan can help you at no obligation to you.

WRITE • WIRE • CALL TODAY—COLLECT

DICKENSON GENERAL TIRE SERVICE

323 N. Water Street • Phone 4-7773 • Corpus Christi, Texas

For more facts, use Reader-Reply Card opposite page 18 and circle No. 261

Folder on steam cleaners

■ A new brochure describing and showing its Series 300 and 500 high-pressure combination cleaners has been published by Malsbary Mfg. Co., 845 92nd Ave., Oakland 3, Calif.

The literature explains how Malsbary HPC cleaners, using two or four guns, simultaneously deliver high-pressure hot solution and high-pressure cold water for continuous heavy-duty cleaning of machinery, and describes the seven cleaning operations possible with the Series 300 and 500.

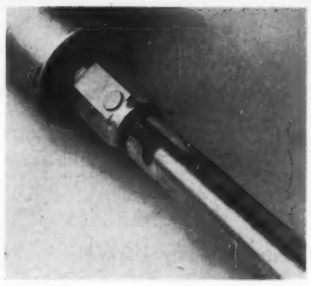
Cost savings of HPC cleaners over steam vapor cleaners are shown in a simple comparison chart, and a condensed table of HPC cleaner specifications is included.

To obtain Catalog No. 500 write to the company, or use the Request Card at page 18. Circle No. 182.

Chemical rust remover

■ Ferox, a noninflammable chemical rust disintegrator manufactured by Service Industries, 2105-07 E. Somerset St., Philadelphia 34, Pa., is described in a folder available from the company. According to the literature, this product destroys the oxidase which rusts steel and iron. It is recommended for use on construction machinery, structural members, nuts, bolts, tools, and other equipment.

To obtain this folder write to the company, or use the Request Card at page 18. Circle No. 131.



New design facilitates change on boring unit

■ Gen-A-Matic Corp., formerly the Multi-Matic Corp., has developed a new milled slotted offset design on the basic shaft of its Super Hole-A-Matic earth-boring machines. The new design feature permits quick changes for earth-boring up to 100 feet or more.

The Model BSCQ-20 shaft design enables the operator to disengage the motor from the shaft when the boring machine is being used for deep earth-boring. New extensions are then easily added for digging to greater depth, and removed when the Super Hole-A-Matic is being withdrawn.

With this new feature, the Super Hole-A-Matic is said to be especially efficient in preparing conduit and sewer lines, as well as in soil testing.

For further information write to Gen-A-Matic Corp., 14741 Bessemer St., Van Nuys, Calif., or use the Request Card at page 18. Circle No. 21.

Allis-Chalmers names manager of parts sales

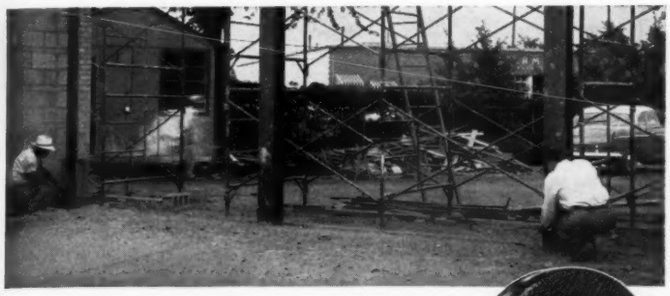
J. D. Harmison, formerly associated with the company's farm equipment division, has been appointed manager of parts sales for the tractor group of Allis-Chalmers Mfg. Co., Milwaukee, Wis. He has been with the company since 1939.

Versatile stud driver

■ A bulletin from the Remington Arms Co., Inc., announces its new Model 455 stud driver. Photographs are accompanied by a question and answer-type description of the tool.

Each Remington stud is identified by the green Power-Guide seal on the head of the stud. This seal not only holds the stud in position and guides it down the barrel, but it also keeps full power directly behind the head of the stud, according to the bulletin.

To obtain this literature write to Industrial Sales Division, Remington Arms Co., Inc., 939 Barnum Ave., Bridgeport 2, Conn., or use the Request Card that is bound in at page 18. Circle No. 108.



The Outstanding Steel Tape for On-the-Job Durability

The Lufkin "Leader" Steel Tape is **Chrome Clad** — many times more durable because the fine steel line is built up by Lufkin's exclusive process with a series of electro-platings. These platings strengthen the line, make it resistant to rust and corrosion, and protect the jet black markings that are easy-to-read against the satin chrome-white background. Line won't chip, peel or crack. Metal case is rust resistant coated, covered with durable maroon vinyl. Available in 25', 50', 75' and 100' lengths. Choice of standard or folding hook ring. Get more for your money — get the Lufkin Leader.

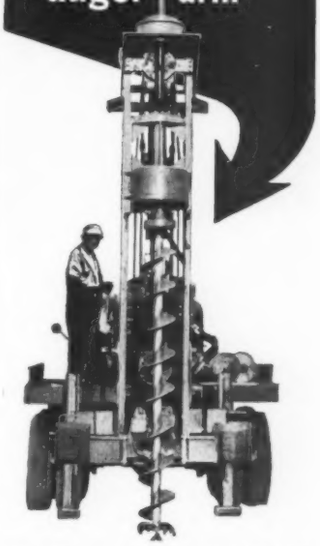
265

LUFKIN LEADER

BUY LUFKIN TAPES — RULES — PRECISION TOOLS From Your Supply House
THE LUFKIN RULE CO., SAGINAW, MICH. — New York City — Barrie, Ont.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 262

World's heavy auger | fastest, vertical drill



NEW HEAVY-DUTY McCARTHY drills 8-inch holes 100 feet deep in sandrock in 40 minutes *

* Ohio River Colliery Co., Cheshire, Ohio

This new heavy-duty drill, Model 106-24, is used for blast hole drilling, general exploration, foundation drilling, dewatering operations, deep post holes, etc. Has high-speed take-off for small diameter augers, and low-speed power take-off (3 to 1 reduction) for large diameter augers. Hydraulically operated throttle valve.

AUGER DIAMETER	DEPTH OF BORE
20 INCHES	30 FEET
16 "	40-60 "
12 "	60-80 "
8 " and under	100 "

8" and 9" diameter augers bore through shale and sandrock to produce larger diameter holes for new type explosives. Larger diameter augers bore through shale and hardpan formations. The choice of contractors where the going is tough.

For complete information contact The Salem Tool Co.

Ask for Bulletin M-100

THE SALEM TOOL CO.
805 S. ELLSWORTH AVE.
SALEM, OHIO · U. S. A.

For more facts, circle No. 264

BUY of the YEAR in loading equipment

Rugged Box-Type Construction Permits Amazing Low Price

The KOLMAN "Junior" Conveyor is designed to meet the demand for a LOW COST portable conveyor rugged enough to support a Loading Trap and large Vibrating Screen. The "Junior" Model 202 will take the kind of punishment that is dished out to a portable outfit—and will cost you less money to own.

The rugged "box type" construction of the "Junior" gives you unusual strength and rigidity for such low prices. The sides are of fabricated 3/16" steel plate formed into a channel 16" deep with 2" legs. A steel belt cover completely covers the top, giving additional rigidity and completely encasing the return belt so as to prevent material from working in to cause belt damage.

The under-slung power unit provides easy access for operation and servicing. Self-cleaning tail pulley, bar type head pulley, ball bearings throughout and heavy duty truck axles and tires are included to give it the biggest combination of fine features to be found anywhere in the low price field.

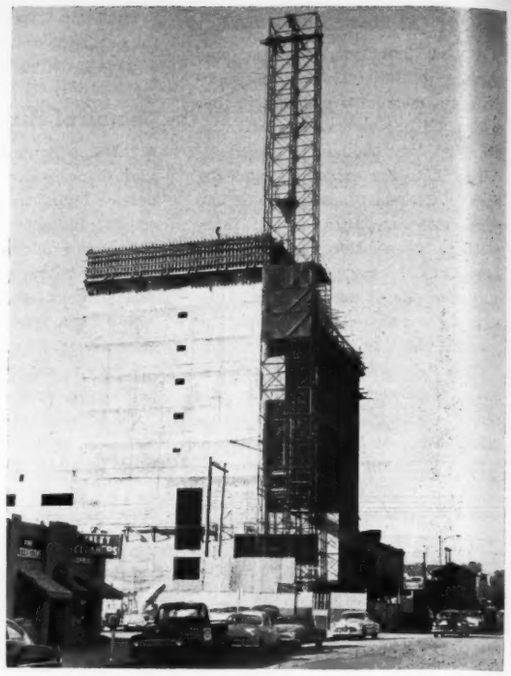
SEND for FREE literature

KOLMAN Manufacturing Co.
4922 W. 12th St., Sioux Falls, S. D.
Please send literature on—
( ) 101 Heavy Duty Conveyor
( ) 202 Junior Conveyor
( ) Screens ( ) Feeders ( ) Traps
Quote ——— size or ——— capacity
Name .....
Address .....
City .....

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 263

A 12-man carpenter crew prepares a floor in 28 hours; hourly placement of lightweight concrete averages 30 yards

Fast form and concrete work finish hotel story in six days



Forms are in place for an end-wall pour—the first in the pour sequence used on the Fremont Hotel in Las Vegas, Nev. Materials are carried to crews working from the Patent scaffolds by a Patent hoisting tower.

Good control of the mix and good scheduling of material deliveries is making the handling and placing of lightweight concrete go smoothly and swiftly on the new Fremont Hotel being built in sprawling Las Vegas at Second and Fremont Streets. Even the fact that lightweight concrete is being placed in temperatures as high as 115 degrees F is not slowing down the job.

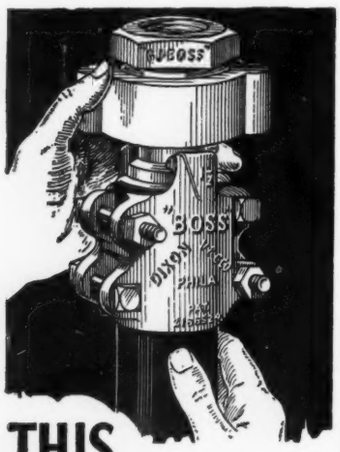
At the present pace, contractor Robert E. McKee, El Paso, Texas, will have the 13-story rigid-frame building completed by the end of the year, just nine months from the start of construction. The tallest building to be erected in the state so far, the Fremont Hotel was planned by architects Wayne McAllister and William C. Wagner as a lightweight-concrete building of rigid frame construction which will reduce dead load stresses.

Included in the 13-story structure is a one-story basement which will park 150 automobiles. At street level, where the building measures 214 × 145 feet, the almost inevitable gambling casino will be located, together with a restaurant and shops.

Above the second story is the tower section, measuring 50 × 130 feet, in which the hotel's 160 guest rooms will be located. The floors of the structure are partly cantilevered from reinforced-concrete columns set about 15 feet back from the edge of the building. North and south walls consist of 8 inches of reinforced concrete. The 9½-inch floor slabs above the third story also consist of a lightweight concrete mix made with Rocklite aggregate, which is designed for a compressive strength of 3,000 psi at 28 days. Most of the tests made so far show actual strengths as high as 4,100 psi at seven days. The roof of the building will consist of built-up waterproofing on 3 inches of lightweight concrete. This will be set on Corruform metal panels resting on Truscon steel trusses.

Form work moves fast

Production of forms, which were re-used many times, was set up on an assembly-line basis, and McKee soon found it possible to cut from 8 to 6 days the time required to complete one full story in the tower. All forming methods on the tower were worked out partly through a trial-



THIS *Washerless* COUPLING

has no equal for efficiency, durability and safety in every high or low pressure hose service . . . steam, water, gas, air, oil, hydraulic. Ground joint union between stem and spud provides leakproof, trouble-free seal. Furnished with super-strong, "Boss" Offset and Interlocking Clamp.

"GJ-BOSS"
GROUND JOINT
FEMALE COUPLING
STYLE X-34

All parts steel or malleable iron, thoroughly rustproofed. Sizes ¼" to 6", inclusive.

Stocked by Manufacturers and Distributors of Industrial Rubber Products

DIXON
Valve & Coupling Co.
GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA.
BRANCHES—CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON
DIXON VALVE & COUPLING CO., LTD., TORONTO, Associate Companies

For more facts, circle No. 265

LIFT OBJECTS QUICKLY—SAFELY... ANY SHAPE OR SIZE!

with DOWNS SAFETY GRABS for Cranes and Hoists

PILE BAND PULLER

Now you can tailor your lifting equipment to "fit" any shape or size materials to be moved with Downs *Safety* Grabs. No matter what your hoists are handling — pipe, rails, drums, plate or structural steel, stone, timber, boxes or odd-shaped objects of any size — there's a Downs *Safety* Grab *designed for the job.*

RIPPING HOOK

Downs *Safety* Grabs give you faster, easier lifting . . . and they're *safety-engineered* to provide a wider safety factor than listed capacity ratings. *They can't let go until you release the load* — real protection for workers that improves morale.

BEAM TONGS

Write for FREE illustrated catalog 2008-8 for complete information on every model — today!

PILE POINT & BAND

PILE PULLER

"THE GRIP that NEVER GIVES"

DOWNS CRANE & HOIST CO.
MECHANICAL ENGINEERS
540 W. VERNON AVE. • LOS ANGELES 37, CALIF.

For more facts, circle No. 266

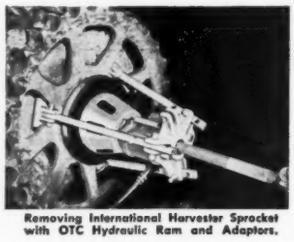
CRAWLER TRACTOR SPROCKETS - MASTER PINS
REMOVED in MINUTES in the field

Removing Track Master Pin with OTC Hydraulic Ram and Adaptors.

with ONE OTC HYDRAULIC PULLER

Hydraulic Ram and Puller makes both jobs easier.

One man can remove a Crawler Track Master Pin or a Sprocket or both in mere minutes with the OTC Hydraulic Puller and Attachments. Available in 50 ton or 100 ton capacities these versatile sets are easily and quickly put to work in the shop or field. Hand or electric pumps are available . . .

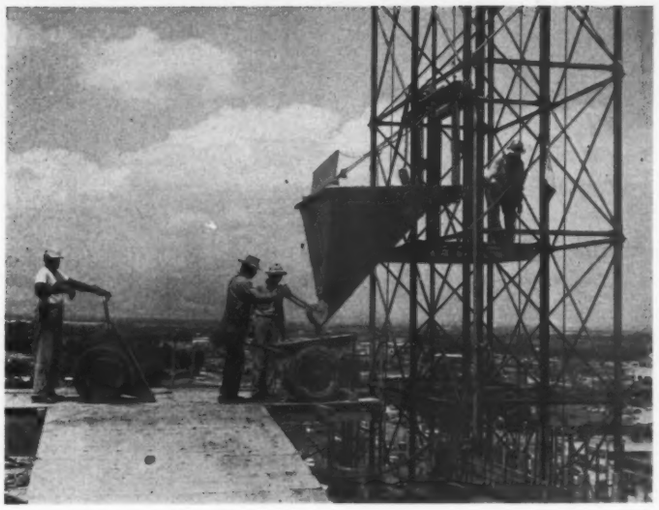

Removing International Harvester Sprocket with OTC Hydraulic Ram and Adaptors.

The OTC POWER-TWIN HYDRAULIC UNITS are also easily adapted to pull, bend, straighten, press or spread—pull or install bearings, sheaves, gears or pulleys on all types of contractor equipment. Quickly pay for themselves in man hours saved. For the complete story on the OTC Hydraulic line write for Bulletin HY-55.

OWATONNA TOOL COMPANY
381 CEDAR STREET • OWATONNA, MINNESOTA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 267

Acrow steel shores support the ¾-inch glazed plywood deck forms for an upper story. Forms rest on 4 x 4 joists spaced at about 12-inch centers and resting in turn on 4 x 6 stringers.



The lightweight concrete, made with Rocklite aggregate, is dumped from a Gar-Bro hopper to one of the Gar-Bro rubber-tire buggies on the job. The builder is using a 5-inch-slump concrete that is workable even in high temperatures. ►

and-error method on the lower portion of the hotel.

Forming for all side walls and the reinforced-concrete columns consists of ¾-inch glazed plywood nailed to 2×4 studs and backed up by double 2×4 wales. High-tensile bolts secure the base of each set of forms to the concrete just below, and the forms are prevented from spreading by Burke snap ties on about 24-inch centers.

All deck forms consist of similar sheets of ¾-inch glazed plywood, which rest on 4×4-inch joists, spaced at approximate 12-inch centers. Running at right angles to the joists are rows of 4×6 stringers, spaced about 5 feet apart. The stringers—and the 4×4 Douglas fir joists and plywood above them—are supported by Acrow steel shores placed about 5 feet apart

(*Continued on next page*)

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Barnes Self-Priming Pumps held down the water level in stream beds while wagon drills pierced rock for blasting. Wherever water was wanted or unwanted on the Lakehead Pipeline Extension — you saw Barnes Pumps working right along with the men — 12 hours a day — 6 days a week!

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Barnes has a pump for every pumping need — from 1,000 to 90,000 gph. capacities. Choice of Gasoline, Diesel, Electric or Pulley Drives.

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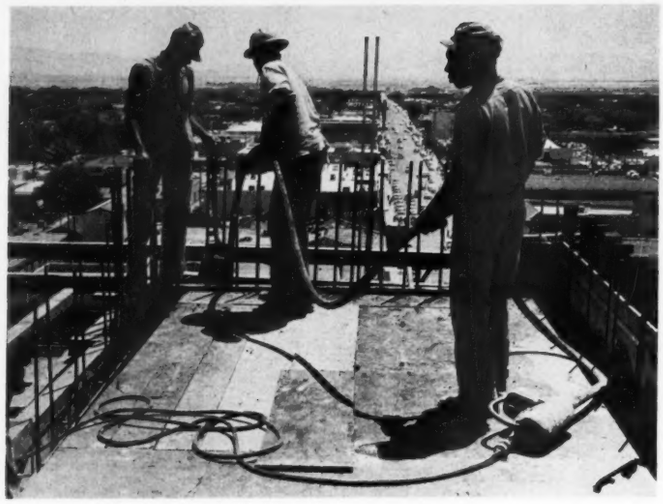
BARNES MANUFACTURING CO.
Mansfield, Ohio Oakland 21, Calif.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 269



Concrete in one of the outer walls of the hotel is consolidated by a Viber electric vibrator.

(Continued from preceding page)

in each row. McKee has about 1,500 Acrow shores on the job. These are enough to support four floors just under the top working level, yet leave a considerable number free for use in the lower sections of the building. Easy to carry and set up, these shores have saved precious storage space.

Electricity and water, available on each floor as construction advances, is simplifying the work of carpenters, who can bring SkilSaws and other power equipment to a higher floor as soon as it is finished. In only 28 hours, a crew of 12 carpenters can complete the form-raising job for a 6,000-square-foot floor slab; the two end walls (each of which has two forms), the support columns, and a host of formed cutout blockouts needed in each floor for utility lines and air conditioning tubes.

The sequence of forming operations followed on this job was influenced to a great degree by the location of the Patent 175-foot scaffolds and the hoisting tower, which were used at one corner of the building for transporting materials and concrete to the work area. Equipped with a 3-drum hoist, the tower could not be located adjacent to any floor since the building is so close to the property line. For this reason, an auxiliary set of Patent steel scaffolding has been erected for use as a work platform.

The location of the tower has practically forced form and concrete work on each floor to be done in several well-planned steps. The two end walls and the main columns are formed first. Then the many rows of Acrow shores, the stringers, joists, and plywood panels are placed.

The center portion of each deck, formed before the edges, is used as a runway by concrete buggies pouring the end walls and columns. This is done a few days before the deck is fully formed. To keep work moving, general superintendent F. H. Morell has his crew finish forming for the half of each pour closest to the tower. This section is poured from the center point of the floor back toward the tower, and the concrete hardens so rapidly that workmen can then use the completed half-deck for access to the next pour on the same floor. The swiftness with which the concrete sets up is exemplified by an upper floor, which was poured at 7 a. m., finished by 11 a. m., and was supporting men applying curing solution by 1 p. m.

Once forming was in place, work was started on what at first threat-

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5 HP—20 POUNDS

Never before has there been a chain saw with so much power per pound as the new Homelite Model 5-20. It has 5 big horsepower for faster cutting . . . a light, light 20 pounds for easy operation. What's more, it is the only chain saw that gives you a choice of attachments to do many different cutting chores easier.

The new Homelite Model 5-20 is precision built for quick starting, dependable performance, and low, low maintenance. Cuts in any position . . . it saves both time and money . . . brings bigger profits to woodcutting or clearing operations. Write for complete details or see your Homelite dealer.

See your dealer for details on the Homelite TIME PAYMENT PLAN

Packed with power, the new Homelite Model 5-20 Chain Saw brings down big trees six feet in diameter, cuts through 20" trees in 20 seconds without forcing or jamming. Anyone can operate it . . . no experience necessary.

DO MORE WITH THESE 5-20 ATTACHMENTS

Interchangeable Blades add versatility to the new Homelite 5-20 Chain Saw. For felling, bucking, limbing or plunge cutting, there's a hard track blade for every requirement. Straight blades available from 14" to 60", bow saws 14" and 18".

Brush Cutter cleans out brambles, brush, undergrowth and small saplings six times faster than conventional methods. The adjustable harness, hanger and handle bars assure perfect balance . . . make it extremely simple to operate . . . safe for anyone.

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Manufacturers of Carryable Chain Saws • Pumps Generators • Blowers

For more facts, use Reader-Reply Card opposite page 18 and circle No. 270

IF IT'S A WET JOB

PLAY SAFE! ASK FOR A DEWATERING ANALYSIS BY

GRIFFIN WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

For more facts, circle No. 271

ened to be the most difficult part of the job—placing lightweight concrete for the structure in high summer temperatures. In hot weather, lightweight concrete of a stiff slump of about 3 inches is impossible to place in thin walls and sets up too rapidly on slabs. Too high a slump makes the concrete weak, creating a soupy mix in which the larger lightweight aggregate particles float to the surface.

After a limited trial period, McKee's concrete crew began working with a 5-inch-slump mix, which proved workable, placed rapidly and easily, and gave compressive strengths as high as 4,100 psi in 7 days with a 6-sack per cubic yard batch. The average rate of placement was maintained at 30 cubic yards per hour on all but the top three floors.

Concrete batched from the commercial concrete plant of Atlas Ready Mix Concrete Co., Las Vegas, is being hauled to the building in Challenge truck mixers which discharge directly to the concrete hoisting bucket in the Patent tower. One signalman, stationed on a small platform situated above the dumping point of the skip, controls the entire transfer operation. A Gar-Bro transfer hopper, large enough to hold several skips of concrete, is used as a surge bin at the dumping point high on the tower.

From 4 to 6 Gar-Bro hand buggies haul from the hopper to the point of placement on the slab, and two men with Viber electric vibrators consolidate the concrete. The material is then screeded, and open-grid-type tamping bars push aggregates down from the surface. Longitudinal floating and steel troweling follows. Two Whiteman power finishers, as well as hand finishers, are used on the slab, and all curing is being done with Hunt Process Clear.

Concrete buffed by power tool

Mortar fins and other slight imperfections in the ceiling are being dressed down economically by a Mall flexible-shaft grinder. Tripod-mounted on a small portable carriage, the electrically powered grinder uses 10-inch No. 24 heavy-duty grinding disks on the concrete. Keeping the spring-loaded head in tension against the concrete, one man can finish buffing 3,000 or more feet of ceiling in one 8-hour shift. As soon as this work is finished, the concrete is ready for applications of filler-sealer and paint.

Precast block setting

The installation of Mosai precast building slabs, in 12×12-foot panels weighing 3,700 pounds each, is expected to be one of the more difficult phases of construction because of the limited working space. The blocks will be set on the east side of the building by a crawler crane with 165-foot boom, but on the opposite side of the hotel, a monorail system will have to be used to get the blocks in place. It is expected that the monorail will be suspended at the floor level on which it is working by several cables leading to anchors at the top of the structure. Holding the monorail at its working floor level is expected to speed the hoisting of each Mosai block to position by reducing the length of hoisting line between that point and the ground.

The job of fastening each block into place will not be too difficult. Cast as an integral piece of each block is a section of steel angle which bolts to a recessed connector plate in the floor slab. Installation of the Mosai block and interior work is expected to be finished in time to put this new addition to the Las Vegas playground into service by the end of the year.

THE END

Armco Steel steps up plans for expansion

The Armco Steel Corp., Middletown, Ohio, has increased its 1955 expansion and improvement program from $60 million to $111 million. This is expected to increase production capacity by 25 per cent.

Almost all of Armco's plants will share in the expansion, with a relatively large portion of the $111 million to be spent for increased steel capacity. Additions and improvements will also be made to the company's rolling and finishing facilities.

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For more facts, circle No. 272

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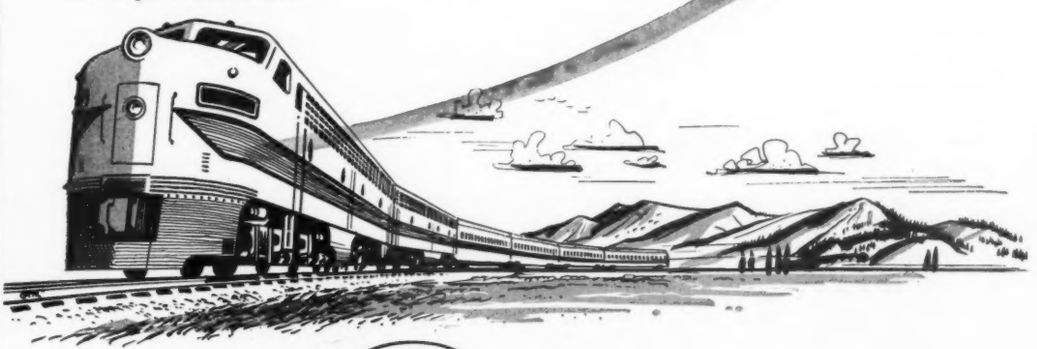
Consider what the application of AiResearch Turbochargers to diesel locomotives will accomplish: A team of these small power packages will provide a greater increase in power at smaller cost in space and weight than any comparable turbocharger or supercharger installation.

In addition, specific fuel consumption on a horsepower per hour basis will be far less. Sea level performance will be restored within operating limits at altitude, response to acceleration demands will be rapid and excessive smoking under operating power eliminated. Also, the noise level will be greatly reduced.

Application in other fields will be equally effective, as has already been demonstrated in the remarkable results achieved by the installation of AiResearch Turbochargers on Caterpillar diesel machinery.

AiResearch is the largest producer of small turbomachinery in the United States, with twenty-five *million* hours of experience. This unmatched experience explains why AiResearch Turbochargers lead in power, economy and dependability.
Your inquiries are invited.



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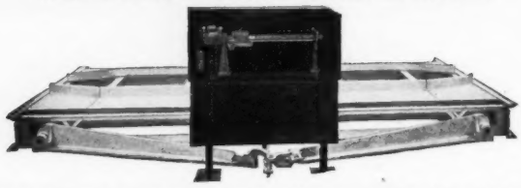

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 274

Scalping, sizing screen in variety of models

■ An economical and effective machine for high-capacity scalping and rough-sizing operations is now available in its new VSF Pulsating Magnet vibrating screen, according to the Syntron Co.

The new VSF models are made of a rigid steel frame and replaceable screening surfaces, and are powered by dust-sealed electro-magnetic drive operating from 220-volt 60-cycle or 440-volt 60-cycle alternating current. Each unit is supplied complete with a separate electric controller, which can be arranged for wall mounting.

Four models with screen dimensions of 18×36, 24×48, 36×60, and 48×72 inches, are offered. Phosphor bronze, stainless steel, or high-tensile-steel woven-wire cloth with openings for 20 mesh to ¼ inch are available.

For further information write to Syntron Co., 227 Lexington Ave., Homer City, Pa., or use the Request Card at page 18. Circle No. 35.

The Syntron VSF Pulsating magnet vibrating screen.

LO-HED Reinforced Concrete Pipe for Culverts and Sewers

Greater Capacity . . . Faster, Easier Installation . . . Less Cost!

Elliptical LO-HED Pipe carries a greater flow than its round equivalent—in a minimum depth of cut with increased depth of cover. LO-HED Pipe is easier to lay, to grade and line. Smooth walls and tight joints insure maximum hydraulic capacity, with a minimum build-up of debris in the invert, even under low-flow conditions. Furnished in pre-tested strengths to answer any low headroom problem, including culverts under highways and railroads.

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A full range of sizes in LO-HED Pipe is available for nearly all culvert and drainage installations.

New brochure available containing hydraulic characteristics and discharge diagrams for all sizes. Write today for your free copy.

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Concrete Conduit Company
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For more facts, use Reader-Reply Card opposite page 18 and circle No. 275

Portable drill tests subgrade, footings

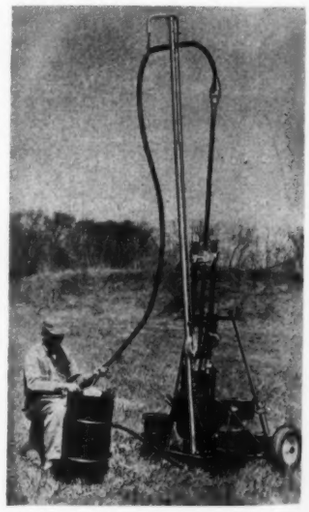
■ The Hossfeld direct-motor-drive drill, heretofore widely used in prospecting for uranium and other valuable minerals, coal, iron, bauxite, and clay, is now finding application in the heavy construction field, according to the Hossfeld Mfg. Co., Winona, Minn.

Using screw-on detachable 1-inch-thread rock bits in stock sizes from 1¾ to 2⅝ inches, the Hossfeld unit drills and takes samples continuously. The lightweight, compact, portable machine is easily moved to the next test drilling. Cuttings and water are brought up through the hollow drill steel by a bit check valve for continual assay at any depth, with little loss of water, cuttings, or silting. Accurate samplings of underground deposits as deep as 110 feet are said to be possible.

Entirely automatic in operation, the Hossfeld drill has a simple, direct-motor-drive transmission which, it is claimed, assures years of trouble-free operation. The motor is mounted on a sliding base to permit taking up excess slack in the belt.

The drill can be towed on its own chassis behind a car, jeep, or truck, or be folded into a half-ton pickup.

For further information write to the company, or use the Request Card at page 18. Circle No. 193.



The Hossfeld direct-motor-drive prospecting drill already has seen wide service in testing for footings on building and bridge projects.

CONVENTION CALENDAR

December 12 New York State Bituminous Concrete Producers Association
Meeting, Waldorf Astoria Hotel, New York, N. Y. Gus Rayner, executive secretary, NYSBCPA, 30 Niblock Court, Albany, N. Y.

January 6, 1956 Northeastern Weed Control Conference
Meeting, Hotel New Yorker, New York, N. Y. Richard J. Aldrich, secretary, Farm Crops Department, Rutgers University, New Brunswick, N. J.

January 11–14 American Road Builders' Association
Annual Convention and 1956 Highway Materials and Supplies Exhibit, Miami Beach Municipal Auditorium, Miami Beach, Fla. Norman T. Almquist, administrative services manager, ARBA, World Center Bldg., Washington, D. C.

January 12 National Constructors Association
Meeting, Plaza Hotel, New York, N. Y. C. B. Bronson, secretary, NCA, 50 E. 41st St., New York, N. Y.

January 12–14 Associated General Contractors of Minnesota
Meeting, St. Paul Hotel, St. Paul, Minn. R. J. Hendershott, manager, AGC of Minnesota, 910 Builders Exchange Bldg., Minneapolis 2, Minn.

January 17–20 Highway Research Board
Thirty-fifth Annual Meeting, Sheraton-Park Hotel, Washington, D. C. Fred Burggraf, director, HRB, 2101 Constitution Ave. N. W., Washington 25, D. C.

January 27–28 National Conference on Construction Operations
Meeting, University of California, Los Angeles, Calif. John M. Server, Jr., Editor, *Southwest Builder and Contractor*, 1660 Beverly Blvd., Los Angeles.

January 29–February 2 Associated Equipment Distributors
Annual Convention, Conrad Hilton Hotel, Chicago, Ill. P. D. Hermann, executive secretary, AED, 30 E. Cedar St., Chicago, Ill.

February 6–8 Georgia Quality Concrete Short Course
Fifth Annual Short Course of Instruction, School of Architecture Auditorium, Georgia Institute of Technology, Atlanta, Ga. Professor Radnor J. Paquette, School of Civil Engineering, Georgia Institute of Technology.

February 13–15 Association of Asphalt Paving Technologists
Annual Meeting, Hotel Cleveland, Cleveland, Ohio. Ward K. Parr, secretary-treasurer, AAPT, 1224 East Engineering Bldg., Box 376, Ann Arbor, Mich.

February 13–16 National Sand and Gravel Association and National Ready Mixed Concrete Association
Convention and Biennial Show, Conrad Hilton Hotel, Chicago, Ill. Vincent P. Ahearn, executive secretary, NSGA, 1325 E St. N. W., Washington 4, D. C.

February 13–18 Danish National Institute of Building Research
Rilem Symposium on Winter Concreting, Danish Institute of Civil Engineers, Copenhagen, Denmark. The Organizing Secretary, Rilem Symposium, c/o The Danish National Institute of Building Research, 20 Borgergade, Copenhagen K, Denmark.

February 15–17 High-Speed Computer Conference
Meeting, Pleasant Hall, Louisiana State University, Baton Rouge, La. Dr. J. W. Brouillette, director, General Extension Division, Louisiana State University.

February 17–18 National Society of Professional Engineers
Spring Meeting, Statler Hotel, Washington, D. C. Paul H. Robbins, executive director, 1121 15th St. N. W., Washington 5, D. C.

February 20–23 American Concrete Institute
Meeting, Bellevue-Stratford Hotel, Philadelphia, Pa. William A. Maples, secretary-treasurer, ACI, 18263 W. McNichols Road, Detroit 19, Mich.

February 23–24 Highway Engineering Conference University of Colorado
Conference, University Memorial Center, University of Colorado, Boulder, Colo. Roderick L. Downing, conference chairman, 207 Engineering Building No. 1, University of Colorado.

February 27–March 2 American Society for Testing Materials
Committee Week, Hotel Statler, Buffalo, N. Y. Fred F. Van Atta, assistant secretary, ASTM, 1916 Race St., Philadelphia, Pa.

February 28–March 1 Illinois Annual Conference on Highway Engineering
Forty-second annual Conference, Illini Union Building, University of Illinois, Urbana, Ill. John W. Hutchinson, assistant director, IACHE, 201 Civil Engineering Hall, University of Illinois, Urbana.

March 2 Illinois Traffic Engineering Conference
Conference, Illini Union Building, University of Illinois, Urbana, Ill. R. K. Newton, supervisor of engineering extension, 116-D Illini Hall, Division University Extension, University of Illinois, Urbana.

March 5–7 Utah Highway Engineering Conference
Meeting, Union Building, University of Utah, Salt Lake City, Utah. A. Diefendorf, conference director, University of Utah.

March 6–10 American Concrete Pipe Association
Forty-eighth Annual Meeting, Broadmoor Hotel, Colorado Springs, Colo. Howard F. Peckworth, managing director, ACPA, 228 N. LaSalle St., Chicago 1, Ill.

Army engineers on the job in new northeast floods

Recent storms causing new floods in northeastern states have caused the U. S. Army Corps of Engineers to keep its personnel in the area, working on a round-the-clock basis to restore public facilities in the stricken areas.

Though most of the vital rehabilitation work had been completed following the ravages of Hurricane Diane, and supplementary personnel had been gradually withdrawn from damaged localities, a majority of the 550 officers and civilian personnel were still on the job. Additional men and equipment were rushed to flooded areas as soon as the state of emergency became apparent again. Like most disasters, the floods caused by Hurricane Diane and the new storms are having at least one good result: the U. S. Army Corps of Engineers is currently making plans for an accelerated program for authorized flood-control projects in the areas that took the worst beating from flood waters.

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INTRODUCED IN 1950

In 1950 the Gyro-Flo was absolutely new—a bold, forward, original idea in portable compressors. There was no other portable compressor like it.

Now, years of successful performance of thousands of units in all four sizes has established GYRO-FLO as the standard in portable compressors. This is affirmed by the ever-growing trend to rotary design.

Here there is no substitute for experience. Maintenance costs cannot be measured by one year's operation—or even two or three years'. Each size must pass the test of time on the job. That's what GYRO-FLO has been doing since 1950. During this time all new, necessary features have been added so that GYRO-FLO is the best established rotary portable compressor now available.

When you purchase GYRO-FLO air power, you get today's most economical portable compressor. There is only one GYRO-FLO—and Ingersoll-Rand has made it since 1950.

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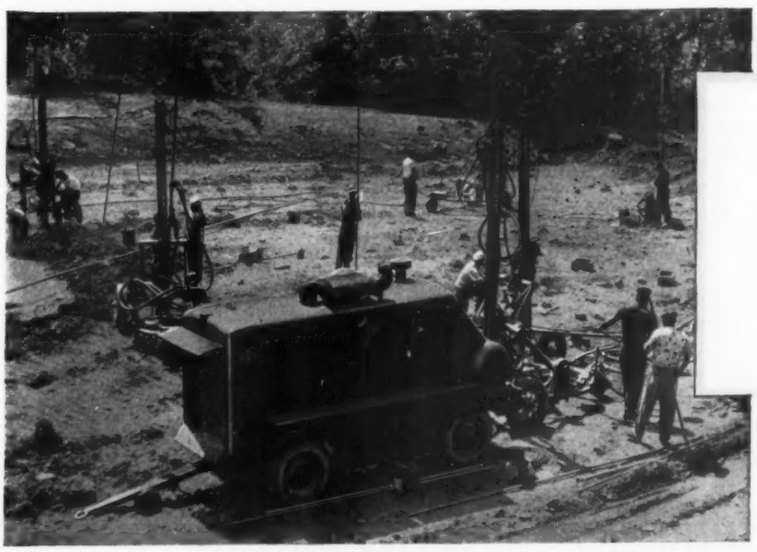

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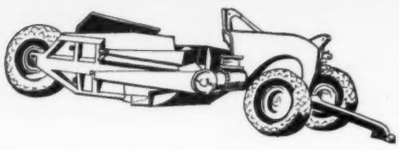

Roads and highways:

Cut and fill work

This is the ninth in a series of articles consisting of excerpts from the 1,280-page book, "Moving the Earth", by Herbert L. Nichols, Jr., published last March. Priced at $15, the book is available through the Book Order Department of CONTRACTORS AND ENGINEERS, 470 Fourth Ave., New York 16, N. Y. A copy may be ordered on approval by circling No. 1 on the Request Card at page 18. Approval copies will be billed at $15 plus postage.

In hilly or mountainous country, roads are usually notched into slopes so that the land rises from one side of the road and dips away on the other. Such a road may be constructed by digging on the high side and using the spoil to build up the low side or, less commonly, by building a shelf of fill.

Difficulties of design, excavation, drainage, and stabilization increase rapidly as hill slopes become steeper.

Removal of topsoil, stumps, and logs may or may not be required. This matter will be decided by the job specifications, or by the judgment of the engineer or contractor.

In general, stripping of topsoil becomes both more difficult and less important as the slope increases, as deep cuts in steep hills increase the proportion of subsoil in the dirt moved.

When stripping is required, the topsoil can most economically be pushed straight downhill by dozers to form the toe of the fill, or a windrow below it may be reclaimed to cover the slopes after the road is built.

If the hill is too steep for machines to back up, the dozer may be equipped with a towing winch and a line anchored above the work so that the dozer can pull itself up the slope. The dozer may also be helped by winch or direct pull from a tractor above it, or by a line around a pulley anchored above it to a tractor on its own level or on a lower one.

Loose stumps can be used in pioneer road fills, but are unsuitable for highways. Their use in intermediate classes of roads will depend on job conditions, the estimated useful life of the road, and the rate of decay of the stumps.

Logs placed at the toe of the fill are useful in catching rolling boulders and checking slides. These, or more elaborate precautions, are often required to protect roads or structures below. They may be held by their own weight, by resting against stumps, or by cables and anchors.

Stumps left intact in steep fill areas may serve to prevent the completed fill from sliding downhill as a mass. Specifications often permit leaving them if they will be buried 2 or 3 feet deep.

If a sidehill is cleared and stripped, the areas to be filled should be plowed or roughened across the slope to reduce the danger of slides.

If the side slope is gentle, the road shelf may be cut by pushing downhill. Steeper slopes may be started in the same manner and finished by working along the roadline.

In general, when the upper bank becomes so steep that the dozer cannot back up it without assistance, it is more economical to work from the side. However, if the line of cut is interrupted by rock ribs, which are not to be blasted until the softer parts of the road are made, a dozer with a helper cable may be used to

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HERE IS A SMALL SHOVEL and front end loader that is fully operated by hydraulic power with independent crowd and hoist action—an excavator and loader that needs no wheel traction. It is the only shovel of its type featuring bottom dumping bucket—emptied completely and instantly!

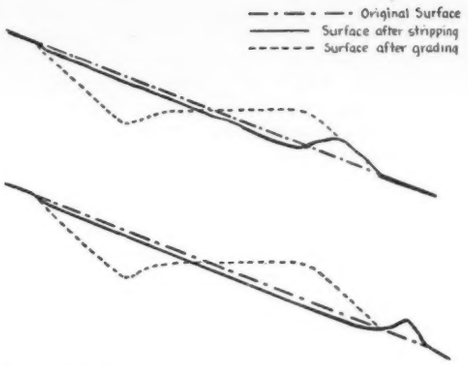
Hydraulic crowd and hoist moves bucket out-and-up to follow contour of material—getting a full load with every stroke. This reduces both loading time and idle truck time to a minimum. Thus, gets the job done faster!

The Dempster-Diggster is the only small shovel that offers you all the important features of big shovels . . . Simultaneous and Independent Crowd and Hoist . . . Hydraulic Crowding . . . Hydraulic Hoisting . . . Variable Crowd Action at any Dipper Position in addition to Changeable Bottom Dumping Buckets for digging or loading. Write for complete facts on this revolutionary, power-packed hydraulic shovel. A product of Dempster Brothers, Inc.

Above Dempster-Diggster GRD-101 is equipped with 1½ cu. yd. loading bucket for materials-handling. Photo below shows Dempster-Diggster GRD-101 excavating with 1 cu. yd. bucket with four teeth.

DEMPSTER BROTHERS, 4125 Shea Bldg., Knoxville 17, Tenn.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 277



Topsoil stripping

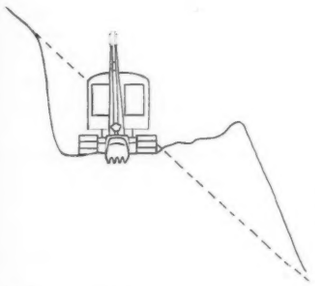
cut benches in each section, at least long enough to permit it to start a sidecasting cut.

Pushing from above, where practical, is faster than sidecasting.

The standard method of notching a steep sidehill is sidecasting with a dozer. A wide-track, close-coupled dozer with a blade that can be tilted to cut low on the uphill side is most efficient. An angling blade, set with the uphill side low, and angled to cast down the hill, is useful particularly in light soils and shallow cuts. The advanced position of the blade may make it difficult to turn with heavy loads.

A nontilting bulldozer blade, or a shovel-dozer bucket, requires special care in preserving a counter slope.

Work is started near the upper slope stakes at a spot naturally or



Sidehill cut with shovel

artificially level enough to permit the dozer to work parallel with the road center line, at the upper edge of the cut. A bladeful of earth is dug along the upper cut line, then the blade is lifted and the machine turned downhill at the same time. After dumping, the dozer is backed until parallel to

Three patterns for push-loading.

and touching the upper line, and another scoop dug and swung downhill.

One or several layers may have to be dug in one spot to obtain enough fill to build out the shelf wide enough to carry the dozer. The steeper the slope, the more passes required.

The blade is raised sufficiently during the dump to keep the fill higher than the cut so that the notch will slope in the opposite direction as does the hill. This keeps the dozer tilted for efficient cutting, allows for compaction of the fill when it is walked on, and also provides the proper cross section for a pioneer road.

When the shelf is wide enough to hold the dozer, further procedures are varied to suit the slope, the soil, the machine, and the operator's preference. The cut can be lengthened to the end of the slope, then cut in successive layers to grade and width, or it may be developed to full size in a single cut.

Layer cutting involves more rehandling of the dirt, as the loads dropped from the first cut are moved again as it is deepened. However, it is easier for a dozer to make shallow cuts, and the angle blade sidecasts most effectively and puts minimum strain on the tractor when the cut is light.

Deep single cuts make it difficult to trim the bank, and may have to be avoided for that reason.

Once a cut of sufficient width has been made between two areas that are wide and level enough for turning,

(Continued on next page)

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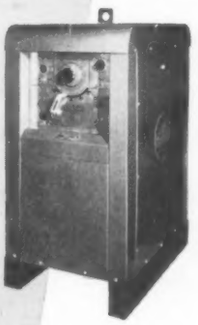

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(Continued from preceding page)

a tractor-drawn belt loader such as the Euclid, or a self-powered unit mounted on a grader, can be used for widening and deepening the cut by sidecasting.

It may be necessary to follow the machine with an angle or straight dozer to grade off the spoil.

The belt machines ordinarily develop the cut in only one direction and deadhead back.

Dipper shovel

The dipper shovel can be used instead of a dozer for notching a slope. It can usually do the rough work in one trip, but if the bank must be trimmed or the cut is very deep, it may be done in layers.

When the width of the cut will allow it, it is good practice to keep the shovel on its floor rather than with one track on the fill. For narrow roads, a part swing shovel, or one with a short overhang in the rear, is desirable. The cut should be kept sloped into the bank to keep the weight off the edge.

The fill is kept higher than the cut, particularly if used for footing. Poles or platforms can be used for extra support under both tracks, or under the outside track only.

When the ground is soft or wet, the slope very steep, soil layers slope with the hillside, or smooth bedrock is just under the cut, the smallest shovel which can handle the digging should be used. The weight of a large machine, together with the vibration of its work, may cause a slide.

Shovel spoil can most conveniently be sidecast, but can be loaded into trucks backed up to it. If the road is long and narrow, trucking out all the spoil will be very slow work.

Rock exposures along the road line should be blasted, as a shovel cannot be readily moved up and down steep slopes to bypass them.

Use of a shovel is indicated when soil is too soft or rocky for effective dozer work, when cuts are deep, and when spoil is to be used at a distance.

The work is ordinarily left rough to be finished off by a dozer or grader.

When the notch is to be largely or entirely a cut and the spoil is to be used nearby on the job, dozer sidecasting is used only until the shelf is of ample width to hold the machinery. The material is then pushed or carried along the shelf to the fill area.

Big dozers can be used for pushes up to 200 feet on the level, and farther downhill with fair efficiency. When the cut is too narrow to allow machines to pass each other, their production can be stepped up, at some additional cost, by using two or more dozers in relays. One, working from the back of the cut, will push a load part way to the fill and spread it a bit in dumping it. The dozer below it will back over the heap and push it to the end of its beat.

Scrapers

Tractor-drawn, full-trailer scrapers are difficult to back, so on a narrow road they require an additional road to bring them back from the fill. This may have to go back to the beginning of the hillside, or enter it at some intermediate point. In either case, the scraper travel is apt to be much longer than that of the bulldozer.

A semitrailer scraper can be backed up a narrow road, but only by a skillful operator. Travel distance would be the same as for a dozer, and production should be very much greater in proportion to power. However, only one scraper can be used conveniently until turnouts can be provided.

If some spoil is being sidecast and some hauled away, a dozer can work on widening and also serve as a pusher.

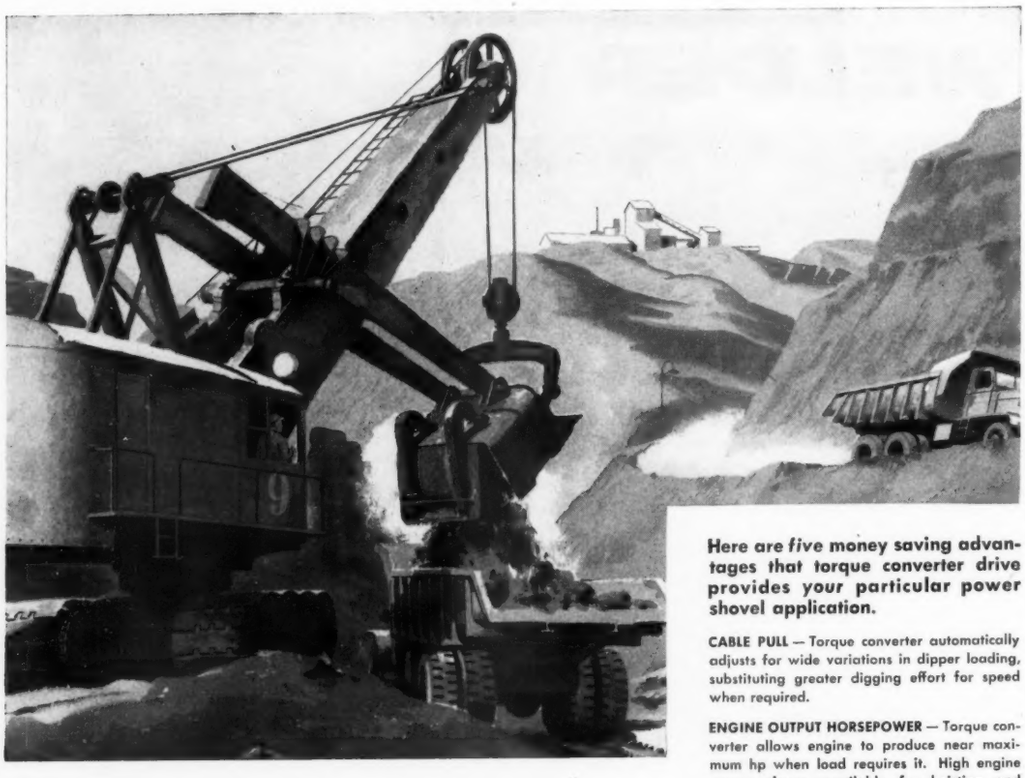
In the first stages of enlarging a notch, it may be difficult to keep the road sloping into the hill because of scrapers sinking and gouging into the loose fill. This pitch may be preserved or restored by running a grader or an angling dozer close to the wall, and casting out. As the cut widens and enters solid ground for its full width, it will become possible to keep it trimmed on the bottom by proper manipulation of the scrapers.

Some scrapers have an adjustment for tire wear which permits raising or lowering one of the rear wheel sets. Such a machine may be set to cut low on the inside during the pioneer stage of the cut.

When a steep hill contains boulders, stumps, or ledge, sidecasting is to be preferred to hauling, and dozers will probably be both safer and more economical than scrapers if short or medium hauls are required.

When a wide road is notched into a hillside by cut and fill methods, it may be difficult or impossible to compact the fill if it is sidecast.

If compaction is required, pioneer notches may be made at the top and



$750 SAVED IN ONE SEASON

using Torque converter on power shovel

A prominent contractor recently reported that he saved $750 in one season using a Twin Disc *Three-Stage* Torque Converter on one of his power shovels.

This total was comprised of savings on three different phases of the shovel's application. (1) Cable—on two shovels with direct drive, cables were replaced *seven times* on one and *eight times* on the other. With torque converter drive, however, the cable was replaced *only three times*. Resultant saving: $350. (2) Maintenance costs — a saving of 12½ cents per hour, or a season total of $250 on the shovel with the Twin Disc Converter. (3) Fuel consumption — the torque converter unit used ½ gallon less fuel per hour, saving $140 in the 2,000 hour season.

You can realize a *similar* saving from *your* power shovels. *Specify* Twin Disc Torque Converters for your new units or *install* them in your existing equipment. For full details see your equipment or engine distributor. Write for bulletin 135-D.

Here are *five* money saving advantages that torque converter drive provides *your* particular power shovel application.

CABLE PULL — Torque converter automatically adjusts for wide variations in dipper loading, substituting greater digging effort for speed when required.

ENGINE OUTPUT HORSEPOWER — Torque converter allows engine to produce near maximum hp when load requires it. High engine power always available for hoisting and crowding.

ENGINE SPEED — Torque converter provides high engine speed throughout its working range, and higher hp output is available for heavy digging and hoisting loads. Converter equipped engine can't lug. Heavy overloads will not kill the engine.

LOWER MAINTENANCE COST—Torque converter reduces peak loads throughout shovel drive train. Cushioning shocks increases wear life for most parts subject to fatigue failure.

LONGER CABLE LIFE — In proved installations, even frayed cables with short life expectancy have been known to last a year or more where a torque converter has provided smooth, sustained output power.

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TWIN DISC
Torque Converters

All facts in the above story are contained in an actual case history. We have not identified the operation because publishing the owner's name would reveal confidential information.

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the bottom of the cut. Scrapers are then used to cut the top down and build the bottom up. Compaction of the fill can be handled by rollers following the scrapers, until sufficient width is obtained to permit them to pass the scrapers on the fill, after which they can operate in both directions.

Push-loading

When the tractor pulling a scraper does not have sufficient power or traction to load it fully and quickly, a pusher tractor may be used to assist it. The pusher, which may be a dozer with or without a reinforced socket in the blade center, or a tractor carrying a rigid frame and push-plate, makes connection with the back of the scraper and pushes it through the digging run until it is loaded.

Most pushers are crawler tractors. Rubber-tired units with four-wheel drive do a good job, but lose efficiency more rapidly under slippery conditions.

Pusher plates are much cheaper, but are of more limited use. Their fixed height may make them unable to push certain pans, or at least require a tedious mechanical adjustment before they can do so. On rocky or uneven ground, it may not be possible to apply the pushing power as efficiently as with a movable blade. They cannot be used to grade or clean up the cut in between pushes.

Snatch tractors may be used instead of, or in addition to, the pushers. These tow the tractor-scraper by means of a cable, chain, or automatic coupler. They avoid the pusher tendency to jackknife the scraper, but connecting and disconnecting are not as rapid, and it is not always obvious when the scraper is loaded and ready to take off.

Pushers are usually required by scrapers whose prime mover has rubber tires and by oversize scrapers drawn by crawlers. They may be helpful to any size or type of scraper-tractor combination in tough going, in short cuts, when time is at a premium, or if loading uphill cannot be avoided.

In short cuts, the pusher will return to the starting point after each shove. In long ones, it may push several scrapers before it reaches the end, when it will return to the beginning at high speed. In two-way cuts, it pushes both ways, with little idle travel.

There are several patterns of pusher loading which are in common use. The simplest is for the scraper to drop its bowl, and the pusher to make contact, at the beginning of the cut. One tractor pulls and one pushes until the desired load is obtained. The pan bowl is raised, informing the pusher operator that he is not needed, if he has not already learned this from watching the load. The tractor scraper then shifts into a higher gear and departs.

The pusher returns to the beginning of the cut. It may make this move in reverse, or by turning and using forward speeds. The length of the cut and the relative speeds the machine can make either in reverse or forward determine which should be used.

If the next scraper gets in loading position before the return of the pusher, it will start to load itself, as it can pick up part of a load readily, and will thereby decrease the distance the pusher must come back in order to get behind it.

Another pattern is suitable only for long cuts. After loading the first scraper the pusher waits for the next empty one to come up alongside it, pushes that until it is full, pushes the next from its stopping point, and so on until the end of the cut is reached. The pusher is then turned and run back to the beginning of the cut to start another series.

A third system is useful where there are more scrapers than the pusher can readily handle, or where the dirt can be moved in two directions. Each scraper is loading moving in the opposite direction from the previous one, so that the pusher need only turn around to be in position for the next push, instead of having to move back to a starting place.

A pusher should have as many scrapers as it can conveniently handle, but it is difficult to maintain a proper proportion because of changes in the length of haul. Two pans might keep a pusher busy on a very short haul, where a dozen might not work it steadily on a long run.

It is more economical to keep a pusher partly idle, than to have scrapers delayed for lack of one.

Where there are more units than a pusher can service, so that one or more are waiting, and it is not possible to shift any to longer runs, it may be wise to have the more powerful tractors or those with the shortest runs load without assistance, so that

(Concluded on next page)

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 282

(*Continued from preceding page*)

all can be kept moving, although with a smaller average yardage.

In many soils a level load can be obtained in a fraction of the time required to add a heap to it. It may be more economical not to insist on the heap, particularly if the haul is short.

Soil and slope conditions being equal, loading time and the size of load in a particular pan are determined by the power applied to it, regardless of whether that power comes from one, two, or three tractors. Ordinarily, crawler tractors are teamed with pans which they can load without assistance, where rubber-tire tractors pull units which are too large for self-loading.

However, when crawlers are to be used for long runs without heavy grades, much larger pans may be used, and loading helped by pushers or steep downgrades. Lessened loading efficiency and cost of operating a pusher are more than compensated by the increasing yardage on each trip.

Loading time may vary from a few seconds to several minutes.

Shovel cuts

Through cuts are made by dipper shovels and trucks when the original surface cannot be readily leveled for scraper operation, when the ground is rocky or wet, when the fill is too soft or too narrow for surface dumping, and when the haul is too long for scrapers.

In general, shovels do best in banks that are about as high as their shipper shafts. Soft, sliding banks of sand or gravel provide best digging when they are very high, but there may be danger from slides.

If the cut is considerably deeper than the favorable bank height, it may be taken in two or more layers or benches. On through cuts with a fairly level cross section the top is removed first. On sidehills there is the choice of taking the top first, or of cutting the toe, then the top, then the floor of the upper cut.

It is first necessary to built a haul road between the start of the shovel cut and the fill. Most of this may be already provided by highways or construction grading. It should be wide enough for two trucks, although for short or small jobs, one lane with turnouts may be adequate. Slope up to the shovel should not be over 15 per cent, although in special cases, grades to 35 per cent have been used.

If no natural turnaround exists at the start of the excavation, and the grade is easy, trucks may be backed in at first. As excavation progresses, the pit floor will provide turning space.

If the cut floor is soft, it is the best practice to use a dragline working from the top. However, if none is available, or the digging is too hard for it, the dipper shovel may work from supporting platforms and have a gravel, stone, or other road built behind it for the trucks. If it is working on the bottom level, the road can be left to facilitate surfacing work.

A busy shovel should have at least occasional help from a dozer, which can level the pit floor, clean up spilled dirt, get boulders out of the way, and assist stalled trucks. Even if the shovel can handle the operation without assistance, it will produce more if it needs only to dig.

A shovel cut should be started on the low side of the grade, and worked uphill so that it will drain. The floor should be shaped carefully to avoid excessive working over.

(*To be continued next month*)

Trench hoe solves difficult problem at Oahe Dam

Shale loading speeded up with use of trench hoe

Ingenuity always pays off — as it is for Pierre Constructors, excavating the stilling basin at Oahe Dam, Pierre, South Dakota. Approximately 114 thousand yards of tough shale must be excavated for construction of the huge basin.

Early phases of this excavation were handled with a shovel but Pierre Constructors realized that precise side wall cuts and accurate grade levels were not feasible by this method. H. B. Bruce, Project Manager for Pierre Constructors, pioneered the thought that a Manitowoc 1¼ Yd. trench hoe could do the job. The hoe has been operated from above and to the sides of the cuts and has not been confined to operation into the face of the excavation as a shovel would be. The results speak for themselves. More yardage has been removed and more important, accurate grades and precise faces have been maintained throughout the project.

Boom stiffness, unusual stability, and power to spare allow this hoe to work from any position and excavate shale without the need of blasting. The versatile Manitowoc uses a maximum of four passes in two minutes time, loading 6 Yd. trucks. Smooth torque converter drive plus air controls enable the operator to handle anything the bucket encounters with ease.

HOE HAS MANY OUTSTANDING FEATURES

This sturdy Manitowoc Hoe can dig down to 25′6″, reach out 38′ and can dump into the trucks with ease at any loading level. Extremely mobile, the 1¼ yd. Model 2000 can be moved as easily as a small machine. The counterweight is self-removing, enabling the hoe to be trailer moved across country — from job to job — and of course can be easily converted to shovel, crane or dragline as the operation requires. Full information on this unit, as well as sizes ranging up to 5½ yd., may be obtained from the MANITOWOC ENGINEERING CORP., MANITOWOC, WIS.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 283

Drilling, fishing tools

■ A bulletin describing its line of drilling and fishing tools is available from Gill Rock Drill Co., Inc., Lebanon, Pa.

Illustrated and described are stem boxes and pins, reamers, drill stems and sinker bars, casing swedges, horn sockets, and many other tools. Sizes, weights, and other important details are given in tables.

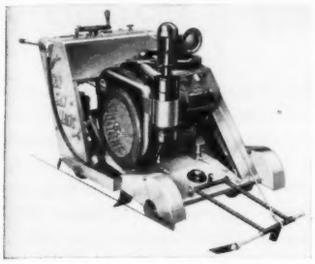
To obtain Bulletin 535 write to the company, or use the Request Card at page 18. Circle No. 107.

For more facts, circle No. 284

New 36-hp concrete saw has retractable wheels

■ A new self-propelled concrete saw combining increased horsepower with automatic retractable turning wheels is the most practical and maneuverable high-horsepower concrete saw ever marketed, according to the manufacturer, Clipper Mfg. Co.

The new Retract-A-Turn feature is said to cut line-up time in half and completely eliminate lifting, breaking back, or tilting forward when moving into sawing position. The saw is recommended especially for sawing control joints and for other heavy-duty concrete cutting.



The new Clipper Model C-360 concrete saw.

According to the company, Retract-A-Turn operation is effortless and automatic. Dual caster wheels automatically take over the load whenever the blade is raised out of the cut. When the blade is lowered into the cut, the caster wheels are raised clear of the pavement. For straight-line cutting, the saw moves forward on four solid rubber-tire wheels without drifting to either side.

Automatic control of the new Retract-A-Turn wheels is accomplished through a positive screw feed that lowers and raises the blade in and out of the cut without bumping or scraping. This control allows instant and easy compensation from the dashboard for the diminishing diameters of abrasive blades, and provides a positive method of maintaining constant depth of cut.

The greatly increased speed provided by the new 36-hp model enables this saw to operate at speeds up to 26 feet per minute—twice the speed of 25-hp units. Speed is instantly controlled right at the dashboard—even while cutting. Self-propelled through a variable-speed transmission, positive traction at every speed is said to be provided by Clipper's exclusive abrasive-coated drive wheels for smooth, continuous forward movement.

All controls on the new Clipper C-360 are dashboard-mounted. Forward speeds are adjustable from the dash while cutting. Start and stop pedal controls are within convenient reach, and a parking brake is provided.

For further information write to Clipper Mfg. Co., 2800 Warwick, Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 8.

Folder on trailer line

■ Information on a line of low-bed and tilt-top trailers and semitrailers is contained in a folder from Spencer-Safford Loadcraft, Inc., Augusta, Kans. Ten models are illustrated and described.

Single, tandem, and three-axle-model low-bed semitrailers are illustrated in capacities from 4 to 50 tons, while a 2 to 20-ton-capacity range is covered by single and tandem-axle tilt-top trailers and semitrailers. Special features of the Loadcraft line are described. Information about custom-built models also is included.

To obtain this folder write to the company, or use the Request Card that is bound in at page 18 of this issue. Circle No. 187.

Rock-crushing data

■ A booklet containing two articles on the crushing resistance and abrasive characteristics of rocks, minerals, and ores, written by Dr. Benjamin B. Burbank, is available from the Pennsylvania Crusher Division, Bath Iron Works, Inc., 323 S. Matlack St., West Chester, Pa., or may be obtained by circling No. 84 on the card at page 18.

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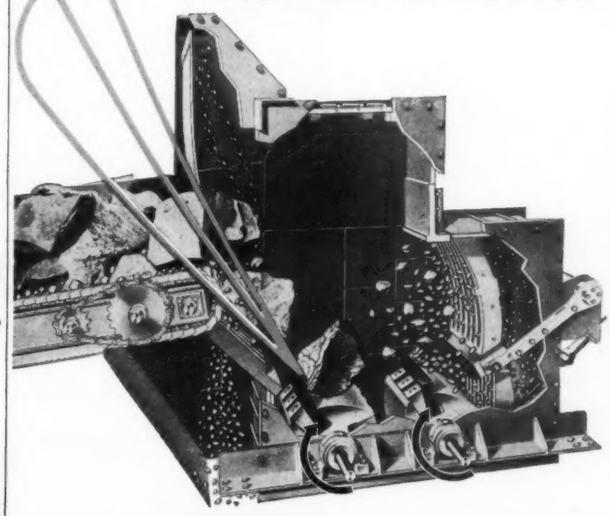

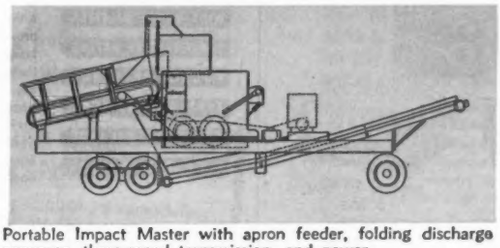

Portable Impact Master with apron feeder, folding discharge conveyor, three-speed transmission, and power.

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This saves you money because fewer hammer blows are required to do the job . . . less wear throughout machine . . . less horsepower.

Result: increased capacity of clean, cubical aggregate. What's more, finished product size is controlled easily with simple mechanical adjustments.

Universal's Impact Master provides capacities up to 1000 tons per hour. Get complete profit-making facts now. Write for literature.

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 286

DISTRIBUTOR DOINGS

Now retired president and chairman of the board, William H. Ziegler, left, still plays an active role in company affairs. Here he shows features of Cat equipment to Gordon Murray of the First National Bank of Minneapolis.

William H. Ziegler— veteran equipment distributor

About the time tractors were beginning to replace manpower and horses as prime sources of power, a Minneapolis, Minn., youth decided to go into a new field of business—the distribution of construction machinery. William H. Ziegler, who last year retired as president of the firm bearing his name to become chairman of the board, was able to start his business in 1914 with only $1,400 in borrowed capital and the idea of providing a service to the construction industry. But the small office he opened in Minneapolis became a pioneer in construction-machinery distribution.

Taking over the accounts of Chain Belt, Ames-Baldwin (now Baldwin-Wyoming), and Wellman Engineer-

Cover up NOW with

HOOSIER TARPS

HOOSIER — THE HOUSE OF CANVAS

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When You Need Them For:

TRUCK COVERS

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Hoosier offers you the finest quality, fastest service and lowest price available. Over 30 years of service to leading contractors throughout the country. Freight Prepaid on orders of $100.00 net or more anywhere in the U.S.A. Write for Catalog No. 55-C1 today.

HOOSIER

TARPAULIN & CANVAS GOODS CO. INC.

P. O. Box 574 • 1302-10 W. Washington Street

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TELEPHONE MElrose 2-9451 Order Today!

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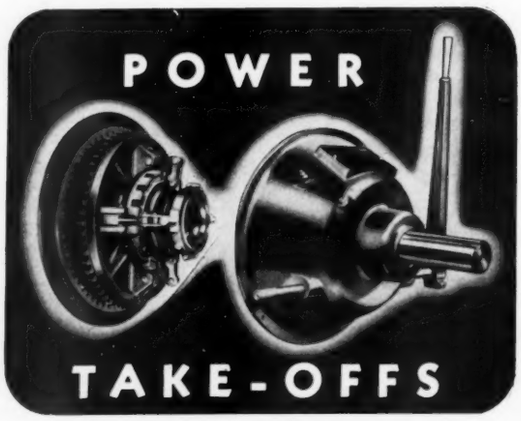
ROCKFORD



ROLLER BEARING EQUIPPED

SELF CONTAINED UNIT
WIDE RANGE OF SIZES
CONSERVATIVE RATING
ROLLER BEARINGS
FINE ADJUSTMENT
ACCURATE BALANCE
S.A.E. DIMENSIONS

* ROCKFORD POWER TAKE-OFFS are equipped with roller bearings of ample proportions to carry the loads to be placed upon them. Provision is made for adjusting the tapered roller bearings that support the shaft. These and the clutch release bearing can be lubricated from outside the housing.

Send for This Handy Bulletin

Shows typical installations of ROCKFORD CLUTCHES and POWER TAKE-OFFS. Contains diagrams of unique applications. Furnishes capacity tables, dimensions and complete specifications.

BW

ROCKFORD CLUTCH DIVISION BORG-WARNER

▲ 314 Catherine Street, Rockford, Illinois, U.S.A. ▲

CLUTCHES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 288

This is the main Wm. H. Ziegler Co. plant at 2929 University Ave. S. E., Minneapolis, 41 years after Ziegler founded the firm as a one-man operation. Today the plant and the four branch offices require a staff of 275 people.

ing, all of which the company still carries, Ziegler had little idea that a new era was beginning for the construction industry. But he did know that both contractors and equipment manufacturers needed local representatives of integrity and honesty to sell and service construction machinery, and he used these two qualities to build the W. H. Ziegler Co., Inc.

Born in 1880 in Mount Carol, Ill., and educated in the public schools of Lyons and Clinton, Iowa, and the Clinton Business College, Ziegler married Drusille Boies at Oak Park, Ill., in 1906, eight years before he left his job with Minneapolis Steel & Machinery Co. to start in business for himself. At that time, the equipment distributor the construction industry knows today did not exist. Manufacturer's salesmen and independent manufacturer's agents provided the only contact between the user of the equipment and the manufacturer, service and parts facilities were unknown, and not many different construction machines were being manufactured.

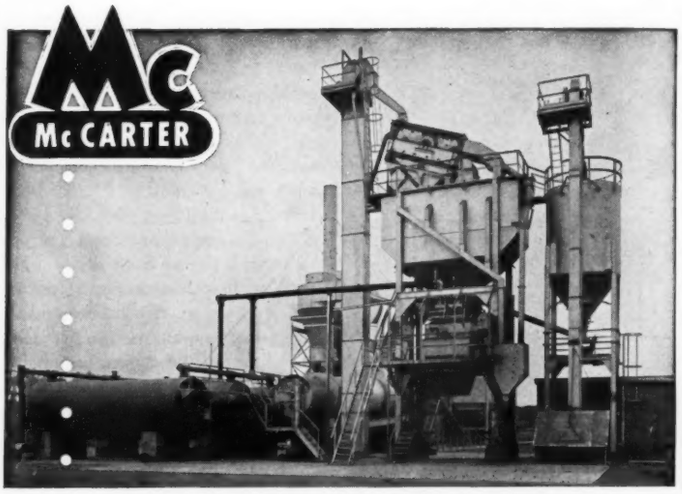
In his early job experiences with the Northwestern Railroad Stores Department and later with Peteler Car Co., Ziegler had learned the importance of fast parts delivery when vital equipment was tied up for repairs. As a result, his company became one of the first in the country to provide an inventory of parts for the machines it sold, and a staff of skilled mechanics to service the equipment.

During 1919 and the early twenties, four key personnel joined Ziegler and his enterprise to help mold the firm into one of the most successful distributorships in the country.

The late O. C. Johnston, who rose to be executive vice president, was one of the first key men hired. He was instrumental in acquiring the C. L. Best Tractor account. Then 1925 saw the C. L. Best Tractor Co. merge with the Holt Tractor Co. to form the Caterpillar Tractor Co. Following this merger, the Ziegler firm bought the Highway Supply Co., which handled the Holt line in Minnesota. Astor A. Anderson, an officer of Highway Supply and now secretary-treasurer of Wm. H. Ziegler Co., joined Ziegler at the time of the merger.

Realizing the potential of the iron range area in Minnesota, Ziegler hired L. T. Gavin, now retired vice president, to be in charge of the Duluth office which was opened in the Providence Building in 1921. J. S. Gilman, retired vice president, started with the Ziegler firm in 1924, when the company took on the Western Wheel Scraper account.

With this additional strength in personnel, the company continued to acquire accounts, among them Bucyrus-Erie, Bros Boiler, Athey, Barber-Greene, Universal Form Clamp, Gard-



FACTORY TO YOU

No middleman involved when you buy a McCarter Asphalt Plant.

This factory-to-you plan guarantees you the most for your money in equipment . . . the most satisfactory service.

Designed by our own engineers, built in our own factory, serviced directly by our factory experts.

Our sales engineers will be glad to counsel with you.

REPAIRS AND MODERNIZING

We specialize in remodeling old plants for better production and more efficient operation.

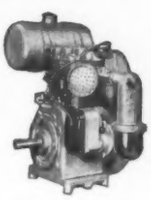
Mc McCARTER IRON WORKS, INC. NORRISTOWN, PA.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 289

More Wheelbarrow POWER with less MANPOWER

it's the WISCONSIN-POWERED Moto-Bug

Shown here are several units of a fleet of 12 MOTO-BUGS, handling concrete in hopper bodies on a 27½ million dollar bridge job near Boston. These "glorified power wheelbarrows", made by Kwik-Mix, Koehring Subsidiary, Port Washington, Wis., are powered by a Wisconsin Model AKN single-cylinder Heavy-Duty Air-Cooled Engine . . . *power to fit the job and the equipment.* The 10 cu. ft. hopper is interchangeable with a 1500 lb. platform or a 1000 lb. fork lift . . . versatility that takes the high costs and hard work out of material handling.



This is the Model AKN 4-cycle single cylinder engine that provides dependable power for the "Moto-Bug". It delivers 3.2 hp. to 6.2 hp., in a speed range of 1600 to 3600 rpm. 2⅞" bore . 2¾" stroke, 17.8 cu. in. piston displacement.

In addition to efficient AIR-COOLING at all temperatures ranging from extreme sub-zero to 140° F., Wisconsin Engine features include tapered roller main bearings, oil pump lubrication (a valuable safety feature), high tension rotary type OUTSIDE Magneto with Impulse Coupling for quick starts in any weather, and heavy-duty design and construction in all details.

You can't do better than to specify "Wisconsin Power" for *your* equipment . . . 12 models, 3 to 36 hp., single cylinder, 2- and V-type 4-cylinder.

MOST H.P. HOURS

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

For more facts, use Reader-Reply Card opposite page 18 and circle No. 290

A field service man with a repair truck brings Wm. H. Ziegler Co. service to a contractor in the field, helping him to reduce downtime on equipment. This "extra" supplements the company's service offices.

ner-Denver, Littleford, Hyster, Butler Bin, and Pioneer. All of these are still handled by the company today. Ziegler modestly states that "we were lucky. Every time there was a merger we won. We got the entire line instead of losing what we had."

Travel was difficult

Railroad construction was of dominant importance during the first quarter of this century, for the need for an extensive system of highways had not yet been felt. Often, railroad contractors worked far from towns, and visiting them at their projects was a rough and time-consuming job.

Traveling by railroad to the station nearest the job, Ziegler hired a horse and buggy from a livery stable to drive out to the work site. And after each call, there was a long buggy ride back to town and the train ride to the next stop.

Selling these men tractors to replace horses and mules usually involved two problems. First, the contractor had to be convinced that a tractor could actually do the work of horses in pulling elevating graders or other machines. Then the horses and mules had to be taken in trade. This was the means by which many excavating and grading contractors made the big changeover from work animals to tractors.

The problem of convincing contractors that a tractor could do the work they required was usually solved by providing an on-the-job demonstration—one generally lasting five days. Disposing of the horses and mules was sometimes more of a chore, and some distributors sadly discovered that keeping and feeding the livestock over a period of time cost more than the animals were worth.

The Ziegler company, however, made a deal with a horse trader who took all livestock acquired in trade.

Yes, MM Engines are built and equipped to order

FURNISHED TO YOUR SPECIFICATIONS IN LOTS OF 1 OR 100!

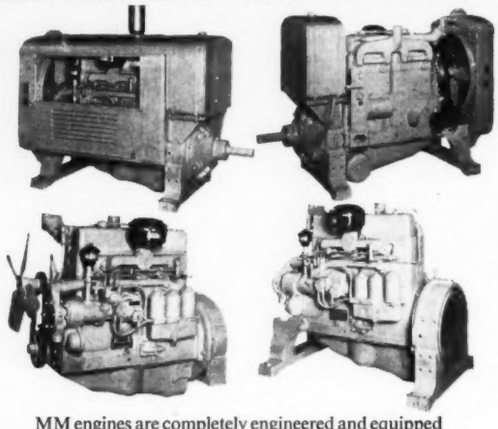
You get power adaption that fits your specifications more readily with Minneapolis-Moline engines. Why MM? Because, as an independent engine builder, no single sales outlet dictates MM engine design—and MM works in such a big variety of power applications.

To meet a wide range of basic requirements MM engines have large displacement for high torque at moderate rpm. Extra high compression and high turbulence combustion combined with high volumetric efficiency provide outstanding performance.

For these reasons MM units are ready to go when equipped with specified operating accessories. You eliminate major auxiliary unit purchases to adapt engine characteristics to meet momentary high load demands. Further long run benefits are low fuel consumption and low maintenance that total up to low cost production.

Every-day experience in supplying a wide range of unit requirements enables MM to maintain customary high quality in single or small lot quantities at reasonable cost.

A high degree of standardization results in high production parts that provide precision fits and permit MM to schedule parts for special units in large quantity, assuring early delivery and customer service.



MM engines are completely engineered and equipped for gasoline, LP gas, natural gas, or distillate fuels. Sizes range from 206 cu. in. portable units to 1600 cu. in. stationary engines and are available for fan to flywheel application or completely enclosed leg mounted installations. MM also builds a line of industrial Diesel power units: Sizes—283-, 425-, 605 cu. in.

Standard equipment includes vacuum crankcase ventilation, thermostat controlled bypass cooling, packaged water pump, built in variable speed governors, enclosed gear driven oil pump, and oversize full-flow oil filters (shunt-type filters are provided exclusive on MM Thermo-Clad units).

Send details on your application for examples of MM built-to-order packages for original or replacement needs. Engineering service available for pumps, hoists, crushers, generators, shovels, ditchers, cranes, compressors, feed mills, saw mills, planing mills and similar installations. When you want dependable performance year after year from your engine, you want an MM Industrial Power Unit.

INDUSTRIAL DIVISION

MINNEAPOLIS-MOLINE MINNEAPOLIS 1, MINNESOTA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 291

STANDS UP TO SEVERE USE *and even abuse*

One word describes a Hayward — **ruggedness.** Yes, it's as tough, strong, sturdy as a bucket can be — and even more so. Extreme simplicity, little if any upkeep, high operating efficiency! Details on request. Write! THE HAYWARD COMPANY, 50 Church Street, New York 7, N. Y.

HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

famous for performance since 1888

For more facts, circle No. 292

The horse trader rounded up the horses, transported them from the job, fed and cared for them, and paid Ziegler a predetermined price.

Snowplowing demonstration

Demonstrating just what machines could do was an especially important part of the sales program in the early days—perhaps even more so than it is today. One demonstration by Ziegler was on a grand scale, and today he recalls with justifiable pride that it was instrumental in opening Minnesota highways for winter traffic.

Prior to 1924, it was generally accepted that nothing could be done about snow-choked roads and many cars and trucks went into retirement each winter as the roads became impassable.

In February, 1924, the Ziegler company was determined to prove that it was possible to open long stretches of rural highways with mechanical equipment. The machine selected for the job was a Best "60" tractor equipped with a LaPlant Choate snowplow. With a crew of four men, this machine started working southeasterly from Minneapolis, and five days later it had opened 110 miles of highway to Rochester and Kasson, Minn.

People in some towns along the way had never seen a machine that could cope with the deep drifts of snow, which successive freezing and thawing had hardened and packed. The wide publicity given this demonstration resulted in a state-wide snow-removal program which, within a few years, covered all the major highways.

Record of growth

From a one-man firm, the Wm. H. Ziegler Co. expanded rapidly, and less than two years after its founding, it moved to a larger office with a staff of three people. Three years later the company moved again, and by this time there were 15 employees. In 1920, the company was incorporated and Ziegler became president.

From the mid-twenties on, the company grew rapidly and steadily. Now, it includes the main plant in Minneapolis and four branches throughout Minnesota, and has a staff of 275 people. The fine facilities of the firm provide almost 200,000 square feet of office, display, warehouse, and shop area. Of this, almost 60 per cent is devoted to warehouse and shop facilities.

Liberal company policy

With little or no help in starting the business, Zeigler had to put in long hours of hard work for many years to get the company on a firm footing. But he believes in making life much easier and more pleasant for his employees. From the beginning, all employees were given two weeks' vacation each year and, after fifteen years' service, they get an additional week's vacation each year.

(Concluded on next page)

Ziegler proudly displays the safety certificate presented to the firm for its record of 380,437 man hours without a lost-time accident. Left to right are J. S. Gilman, retired vice president; Ziegler; S. M. Dingman, safety engineer for Liberty Mutual Insurance Co.; and Astor A. Anderson, secretary-treasurer.

Modern Truck Features That Mean Business!

Chevrolet trucks have got it! A full list of modern features that mean better business—on the job today and at trade-in time tomorrow!

When you get right down to it, any truck without all of Chevrolet's Task-Force features is still living in the past. Why risk losing money with an old-fashioned truck—both on the job and at trade-in time—when you can get a Task-Force model with the industry's most advanced features?

Most modern power—V8 or 6. There's longer life in Chevrolet V8's (extra cost in most models). With their short-stroke design—shortest of any leading truck—you can count on less friction and wear per mile. If you go for sixes—Chevrolet's gas-saving valve-in-head sixes are famous for their dependability. All engines are sparked by a modern 12-volt electrical system for quicker starting and smoother going!

Most modern comfort and safety features. New efficiency boosting advances like panoramic windshield, High-Level ventilation, softer seat action and concealed Safety Steps!

Most modern chassis features. New suspensions; new, more rigid frames; Power Brakes standard on 2-ton models!

See your Chevrolet dealer for details. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

NEW CHEVROLET Task-Force TRUCKS

CHEVROLET

For more facts, use Reader-Reply Card opposite page 18 and circle No. 294

ROAD BUILDERS — IT'S SENSATIONAL

DRAGS **PECKERWOOD** DRAGS

STEEL SPRING WIRE ROAD BROOMS

MADE IN ANY C-O-N-T-I-N-U-O-U-S LENGTH UP TO 12 FEET
WIDTH 6 INCHES—IT'S DIFFERENT
ASSEMBLE YOUR OWN—IN ANY SHAPE REQUIRED — IN MINUTES, NOT HOURS

NO FRAME REQUIRED

MADE WITH KILN DRIED 6" WIDE HARDWOOD AND HEAVY SPRING STEEL WIRES TRIPLE OUT EACH HOLE. NOT STAPLE SET.

THIS IS IT

ORDER NOW

ILLUSTRATION OF 10-FOOT LENGTH ONLY **$3.50**

RUNNING FOOT F.O.B. KC., MO.
NOTICE! Our 15" length Unit Drag 3" wide with the two bolts that fit your frame, still $2.50 ea.

SINCE **VAN BRUSH MFG. CO.** 1928
327 S. WEST BLVD., KANSAS CITY 8, MO.

For more facts, circle No. 293

Traxcavator, Rex, Coffing Hoist, Skil-Saw, Caterpillar, Onan, Leschen, and Wisconsin are among manufacturers with equipment represented on the display floor at the Minneapolis plant.

(*Continued from preceding page*)

The pension and profit-sharing plans set up by the firm now have more than 1½ million in reserve. Both plans assure an adequate retirement income for employees reaching the compulsory retirement age of 65. Hospital, life, accident insurance, and other benefits, are company-provided.

Active in AED founding

Though the firm's business always took up most of his time, Ziegler has been active in a number of organizations, notably the Associated Equipment Distributors. He realized early that business competitors, banding together, could benefit from mutual association, and in 1920 he joined with a few other distributors to found the AED. Ziegler, who was fourth president of the AED in 1924 and who has served on its board of directors and many important committees, has seen the organization grow to include most of the equipment distributors in this country and to become a powerful force in matters of manufacturer-distributor relations.

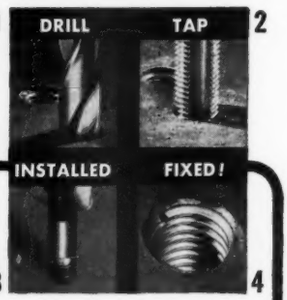
Among his many other activities, Ziegler has been an active Kiwanian, serving as president of the downtown Kiwanis Club of Minneapolis in 1928 and as a trustee of the Kiwanis Foundation. He also took an active part in many civic activities, among them the first Minneapolis Community Fund campaign in 1917. An ardent hunter and fisherman in his younger days, Ziegler was also interested in football and golf, and has been active in the Minneapolis Golf Club and Minneapolis Athletic Club.

Mr. and Mrs. Ziegler, who have two daughters and two grandchildren, today live in a comfortable home near Minnehaha Parkway in south Minneapolis. Though illness in 1948 forced him to curtail his activities and to take a less active part in the business, Ziegler continued as president of the firm until last year. Now, as chairman of the board, he still spends three days a week in the office, taking part in all major policy decisions and keeping in close touch with every phase of the firm's operation. This he has done since the firm started as a pioneer in the equipment distribution business. The only difference now is that the company is one of the largest and most successful of its kind in the country. THE END

STUCK, LOOSE, BROKEN, STRIPPED THREADS?

MAKE SIMPLE, SAME-SIZE REPLACEMENTS

on the spot with HELI-COIL* Shop-pack



Here's how contractors and engineers are using ***Heli-Coil*** Shop-packs to reduce downtime, save overhead and meet contract date specifications.

Downtime is costly, particularly when the contract carries a penalty clause. Here's a new, tested technique for beating the clock. You can now replace stripped, damaged or corroded tapped threads *in the field* with ***Heli-Coil*** Shop-packs. Any workman can repair your equipment on the job in minutes. No time is lost in sending disassembled parts to central repair depots. Downtime amounting to hours and sometimes days is eliminated.

There is a ***Heli-Coil*** Shop-pack for every size thread and all types of equipment. Each contains a tap, inserting tool, generous supply of inserts and full instructions. Use Shop-pack for permanent, back-to-original size, stronger-than-ever repairs...made in minutes.

Call your supplier *today* or mail the coupon for Shop-pack details.

*Reg. U. S. Pat. Off.

HELI-COIL CORPORATION

692 Shelter Rock Lane, Danbury, Conn.

Please send me Bulletin No. 724A on the NEW Shop-pack.

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____ 1941

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 295

Increase Storage Capacity Up to 10 TIMES

Notice how the addition of a Swivel-Piler will increase the storage volume of a conveyor, without moving the conveyor.

S-A SWIVEL-PILER *for conveyor mounting*

The S-A Swivel-Piler, quickly and easily mounted on the end of your conveyor, will increase your storage range 10 times and eliminate frequent conveyor moves... saving you hundreds of dollars. This simple, centrifugal thrower unit throws almost any bulk material, up to 2" lump size. User always has complete control over the path of discharge.

IN STOCK FOR IMMEDIATE DELIVERY

Write today for complete information.

STANDARD PRODUCTS DIVISION

STEPHENS-ADAMSON MFG. CO.

97 Ridgeway Ave. Aurora, Illinois

For more facts, use Reader-Reply Card opposite page 18 and circle No. 296

The Delmag diesel pile hammer operates through a steel girded tower held by the boom cable of an ordinary mobile crane.

Diesel pile hammer in heavy-duty models

■ A diesel pile hammer developed in Germany and now available in this country from Foundation Equipment Corp., Newcomerstown, Ohio, is offered in models with net ratings of 9,100, 22,500, and 39,700 foot-pounds per blow.

Designed by the Delmag Machine Works in Germany, this diesel pile-driver consists of a slender cylinder guided by the rails of a triangular steel girded tower. The tower is held by the boom cable of an ordinary mobile crane. By a process the company calls "kick-atomizing," internal combustion due to compression ignition lifts the ram and produces pressure for the downward stroke.

Diesel operation of the Delmag hammer eliminates the boiler and hoses, as well as other equipment required with steam-driven pile-driving machinery. Valves, crankshaft, cooling pumps, and other auxiliary equipment are eliminated. This simple heat engine reduces the possibility of mechanical failure and simplifies maintenance.

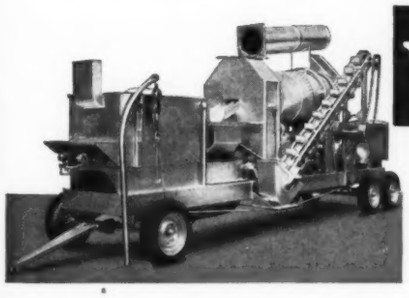
Standard diesel fuel is used to operate the rig. Easy starting, even in extremely cold weather, is claimed for the pile-driver by the maker.

The Delmag hammer is available with towers varying in length from 35 to 70 feet.

For further information write to the Foundation Equipment Corp., 100 Elizabeth St., Newcomerstown, Ohio, or use the Request Card at page 18. Circle No. 103.

Lehigh Structural Steel wins safety award

The Lehigh Structural Steel Co., Allentown, Pa., in recognition of two years without a lost-time accident, received the Pennsylvania Manufacturers' Association award. The award was presented by the association's president, G. Mason Owlett, to Lehigh's president, Thomas R. Miller.



White

Stationary Plants L-12 and L-25, 15-30 ton capacity.

PORTABLE ASPHALT PLANT

MODEL L-8, 10-15 TON CAPACITY

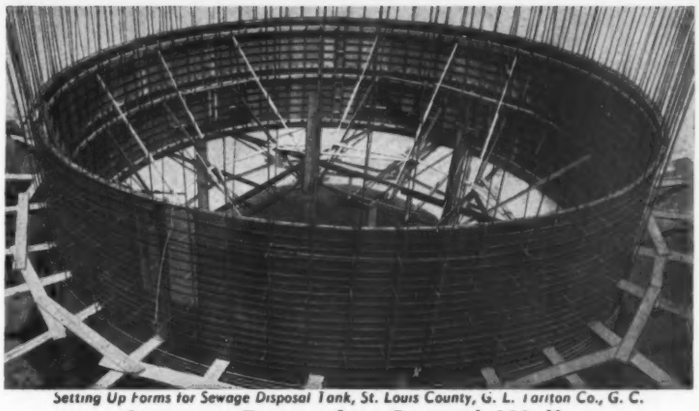
A *COMPLETE* ASPHALT PLANT ON ONE CHASSIS . . . DRYER, MIXER, HEATING KETTLE. Low in cost, small enough to tow, BIG enough to produce HOT mix, (or any other bituminous mix) for driveways, parking lots, street maintenance, etc. Equipped with 50 HP LeRoi engine, air operated gates for *one* man control, divided compartment, reciprocating feeder for proportioning aggregate. Available as stationary plant with 30 HP electric motor.

Write for catalog and name of nearest dealer.

White MANUFACTURING COMPANY

ELKHART 9, INDIANA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 297



Setting Up Forms for Sewage Disposal Tank, St. Louis County, G. L. Tarlton Co., G. C.

Symons Forms for Curved Walls

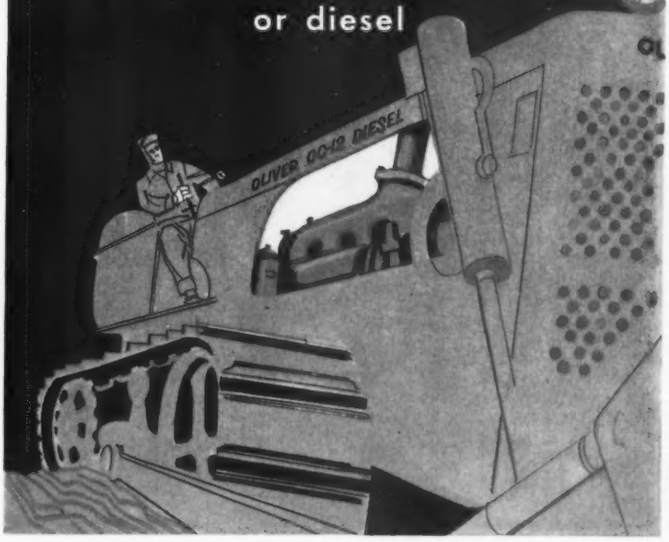
Symons Rib panels are used with V-shaped fillers at each joint. Wedge-bolts secure the 3 pieces together and also hold the ties in place. Curved walers or 1" x 6" flat walers may be used for alignment.

Contractors report savings of $5,000.00 on forming costs of Sewage Disposal Plants. Symons offers a complete engineering service. Send plans for your next job and get complete layout and cost sheet—no obligation. *Symons Clamp & Mfg. Co., 4251-L5 Diversey, Chicago 39.*

For more facts, use Reader-Reply Card opposite page 18 and circle No. 298

POWER by HERCULES

choice of gasoline or diesel



Here's another example of powerful equipment offering the choice of either Hercules Gasoline or Diesel Power. The Oliver OC-12 Crawler Tractor is available with either the dependable Hercules Gasoline Engine, Model JXLD or the rugged fuel-saving Hercules Diesel Engine, Model DJXC.

The inherent fuel economy of the diesel powered OC-12 pays greatest dividends when the equipment is operated at full schedule. The JXLD powered OC-12 provides the same type of rugged dependable service and is often specified when the equipment is to be operated at less than full schedule.

The modern line of Hercules Gasoline and Diesel Engines provide the right type of engine from 3 to 500 H.P. for your power requirements. For dependable service, specify Hercules Power — the product of Engine Manufacturing Specialists Since 1915.

HERCULES ENGINES

HERCULES MOTORS CORPORATION

40 Years of Engines for Industry

131 Eleventh Street, S. E. • Canton, Ohio

For more facts, use Reader-Reply Card opposite page 18 and circle No. 299

CONSTRUCTION CAMERA

Preparing a 600-acre site for the $45 million Pittsburgh Plate Glass Co. factory near Cumberland, Md., these International 2T-55 earthmovers are push-loaded by International TD-18A crawlers. The deepest cut is 17 feet and the deepest fill is 7 feet. The George F. Hazlewood Co., Inc., Cumberland, is the contractor.

The subgrade of an interchange ramp for the plate-girder bridge linking the Queens-Midtown expressway and the Horace Harding Boulevard in New York City's borough of Queens is prepared by a Gradall, which works in the 24-foot space between the forms. The grade separation structure is in the background.

Wire Rope at Work—This is part of the steelwork for a brand-new building on New York's East Side. It will be a beautiful multicolored structure topped by a striking blue tower. When completed, the building is to be known as 711 Third Avenue. "711" will usher in an era. It is expected to pioneer an exciting period of new construction on Third Avenue—a development forecast by the razing of the elevated railway.

As the steelwork for 711 went up, Bethlehem wire rope was much in evidence. You see some of it in the photograph: that hoist line, for instance, descending from the derrick boom. The rope was Purple Strand, of course, Bethlehem's toughest grade, and it handled those heavy structural members as if they were straws. A typical assignment for Purple Strand, one duplicated many times a year in every part of the country.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

CONSTRUCTION • MINING • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING

For more facts, use Reader-Reply Card opposite page 18 and circle No. 300

Corps of Engineers jobs open in two cities

Positions as industrial and general engineers with the Philadelphia District Office of the U. S. Army Corps of Engineers are now open. The salary for both types of jobs is the same, $4,930 a year.

Interested persons should apply at the Personnel Branch of the Philadelphia District at P. O. Box 8629, Philadelphia 1, Pa.

The New York District of the U. S. Army Corps of Engineers critically needs engineers for work on military and civil construction projects. Civil, structural, hydraulic, architectural, and materials engineers are needed. Salaries range from $3,175 to $7,570. There are no age limitations.

Applications should be filed with the Personnel Branch, New York District, Corps of Engineers, U. S. Army, 111 E. 16th St., New York 3, N. Y.

Corbetta starts work on military base in Spain

The Corbetta Construction Co., New York, N. Y., has begun preliminary work on the construction of American-financed military bases in Spain. Working under a $17,372,000 joint contract with Construcciones Civiles, S. A., of Spain, Corbetta will build a breakwater-protected seaport and fuel-supply base in Rota harbor on the Atlantic Ocean near Cadiz.

A navy airstrip, to be built under a separate contract, is the key facility in the program and will be the principal supply point of U. S. Air Force bases in Spain. It will be the only U. S. Navy installation in Europe where aircraft carriers can be fueled and carrier-based planes landed and serviced.

Corbetta will direct the construction of three major projects in the Rota development. Another joint venture firm, BRW, composed of Brown & Root, Houston, Texas, Raymond Concrete Pile Co., and Walsh Construction Co., both of New York, N. Y., has been designated by the U. S. Navy Bureau of Yards and Docks as the prime management contractor to direct construction of all bases.

The biggest area to be stabilized on the Indiana Turnpike is excavated to a depth of 50 to 60 feet by this Manitowoc Model 4500 dragline with 140-foot boom. Located near Chesterton, the 170 x 3,000-foot muck hole will be filled to 30 feet above original ground level with a sand surcharge which will settle about 25 feet.

Dwarfing the Caterpillar D8 tractor-dozer, a big Marion walking dragline dumps a load of earth into a Euclid 25-yard bottom dump during earthwork operations on Gavins Point Dam near Yankton, S. Dak. The reinforced-concrete structure is the newest flood-control facility on the Missouri.

Text discusses theory of cylindrical-shell design

Thin-shell roof construction, now generally accepted as a specialized building form, is discussed in a new text, "Analysis of Symmetric Cylindrical Shells—Its Application to Civil Engineering Design".

Written by John McNamee, Ph.D., the text is composed of a series of lectures given originally at Liverpool University, England, and gives an account of the theory of thin cylindrical shells for those who are approaching the subject for the first time. The application of the theory to the stress-analysis of reinforced concrete structures is shown in diagrams and charts.

Published in London, the 85-page book is available from the British Information Services, 30 Rockefeller Plaza, New York 20, N. Y., at $2.25 per copy. An additional 11 cents is charged for postage and handling.

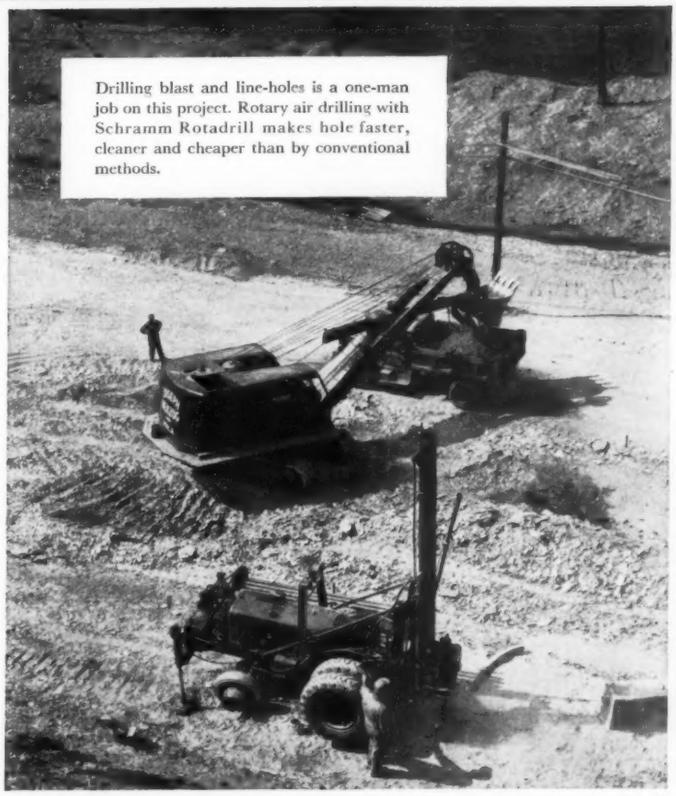
Rutgers will study frost penetration of soils

The National Science Foundation has awarded $22,700 to Rutgers University, New Brunswick, N. J., to support a research project on frost penetration in soils. Dr. Alfreds R. Jumikis, professor of civil engineering in the College of Engineering will direct research activities.

Experiments will be performed in a specially equipped Rutgers laboratory that will simulate field conditions. Fundamental research is aimed at providing information that can be used in the design of base and subbase layers.

Course in construction offered on graduate level

The civil engineering department of Stanford University now offers a one-year graduate program in construction. Aimed at giving students a fundamental background important to the industry, the course will also offer a choice of classes in the Stanford School of Business, and in industrial engineering, law, geology, mining, and parallel fields. Credit received may be applied toward a master's degree in civil engineering.



Drilling blast and line-holes is a one-man job on this project. Rotary air drilling with Schramm Rotadrill makes hole faster, cleaner and cheaper than by conventional methods.

SELF-PROPELLED. The new Schramm Rotadrill is mounted on the Schramm Heavy Pneumatractor. Special weight boxes, dual wheels and the use of calcium chloride in rear tires add necessary weight to provide 10,000 lbs. down pressure. Schramm Rotadrill is also available truck mounted.

CONVENIENT, SIMPLE CONTROLS. Drilling controls are mounted in one bank, with pressure regulator and hydraulic gauge for controlling down-feed. Separate valves control each outrigger, forward and reverse rotations motor, slow downfeed, rapid downfeed and breakout cylinder.

LARGE EASTERN CONTRACTOR SHATTERS RECORDS:

New cost and time records set for construction excavation

With the development of the new Schramm Rotadrill, rock drillers everywhere gain all the advantages of rotary rock drilling with compressed air. This comparatively new technique, originally developed in the oil fields, has been setting drilling records in almost every installation. It is believed that rotary rock drilling, with its advantages of clean, fast holes, fast set-up, and longer bit life, will completely replace the use of wagon drills.

Schramm's new Rotadrill on Pneumatractor is a complete, self-contained unit, self-propelled and self-powered. The unit can drill a 4¼" hole, or smaller, to a depth of 500 feet with 10,000 pounds down pressure. Normal compressed air drilling pressures of 20-30 psi can be instantly increased for dewatering or breaking out blockages. Drilling controls are mounted in one complete bank, conveniently located for one-man operation. Standard Rotative Head has 75 RPM output and can be throttled down to complete stall while maintaining constant torque. Heavy welded structural steel mast, lowered for traveling between jobs, can be operated at various angles for sloping holes.

If you use wagon drills, you will find it worth while to investigate the Schramm Rotadrill on Pneumatractor. Send today for Bulletin PR-55. There is no obligation.

ADDING PIPE. Fast vertical action of rotative head serves as pipe hoist for adding pipe or pulling drill string. Output spindle is flanged to take various drill pipe adaptors.

Your local Schramm Dealer is listed in the Yellow Pages of your telephone directory.

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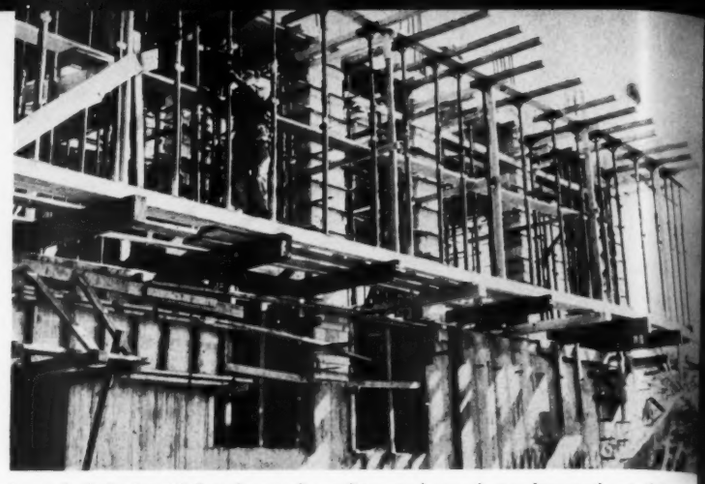
For more facts, use Reader-Reply Card opposite page 18 and circle No. 301

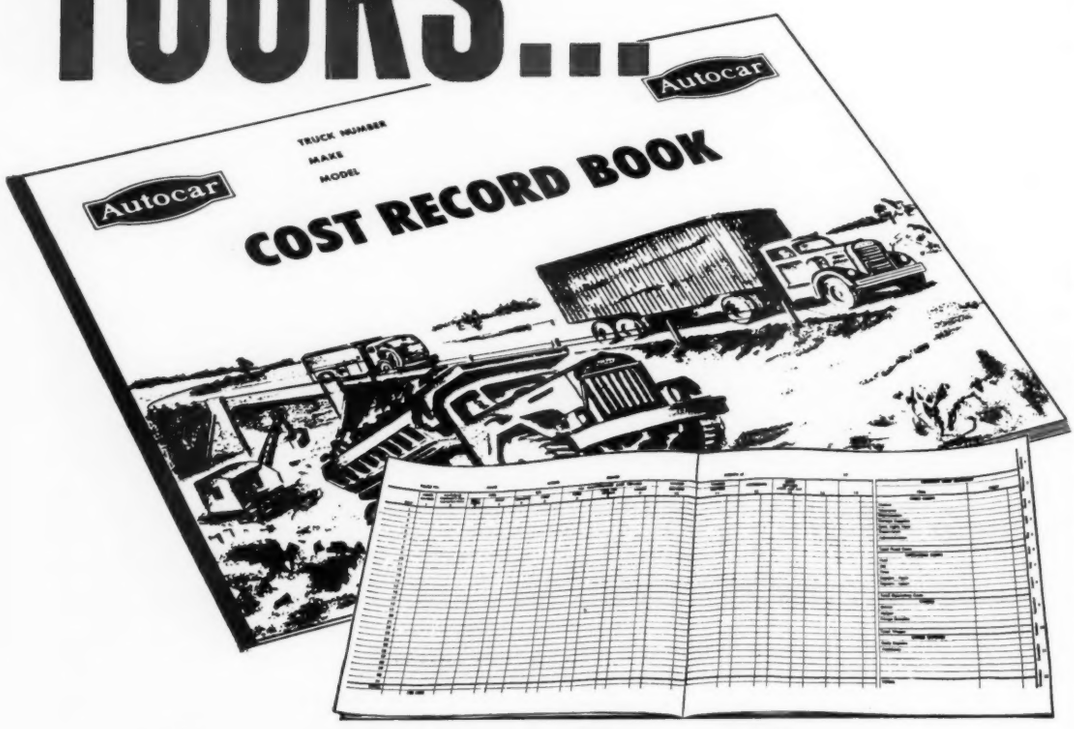
CONSTRUCTION CAMERA

To take care of a 75 per cent increase in population, Columbia, Mo., is building a $1,300,000 sewer addition. B & G Construction Co., Carthage, Mo., working under a $556,406 contract, uses a Lorain 50 backhoe of 1-yard capacity to dig the primary ditch to a depth of 18 feet in rock, sand, and clay.



Instead of shoring 20 feet from soft, settling sand to a beam formwork on this second-story building, Kraus-Anderson, Inc., Minneapolis, Minn., secured outriggers to the flood slab, set 6 x 6-foot timber purlins on the outriggers, and used Waco shores, extended to 11 feet, to support the formwork.

YOURS...



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Start the year with this comprehensive yet amazingly simple system to record total costs of each heavy-duty truck in your fleet.

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For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 302

Engineering opportunities in BPR listed in new book

The Bureau of Public Roads has published a pamphlet, "Opportunities in the Bureau of Public Roads for Young Engineers". Designed to provide information for college students, it gives information about the organization's training program, domestic and foreign operations, salaries, retirement plans, etc.

Additional information may be obtained from the Personnel and Training Office, Bureau of Public Roads, Washington 25, D. C. The pamphlet may be bought for 25 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

New reference work treats of cement and concrete

The first part of a projected two-volume work "The Technology of Cement and Concrete" discusses concrete materials and examines the concrete-making qualities of each material. The main emphasis is on portland cement and aggregates, but the text also includes information on materials about which data is not readily available from other sources.

Written by Robert F. Blank, vice president and general manager of

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For more facts, circle No. 303

Concrete being chuted into this ditch at the Tide Water Associated Oil Co.'s new refinery near Wilmington, Del., encases electrical ducts carrying 200 miles of underground power line for the facility. In the background, a dragline continues excavating the huge trench.

Two 16,000-yard cuts were enough to level this hillside farm during reconstruction of 3½ miles of highway near Wakapuaka, New Zealand. Here a Caterpillar DW15 tractor with matched scraper picks up a load of material for the road foundation while a Cat D8 push-loads the rig.

Great Western Aggregates, Inc., Denver, Colo., and Henry L. Kennedy, manager of the construction specialties division of Dewey & Almy Chemical Co., a division of W. R. Grace & Co., Cambridge, Mass., the book is particularly suited to the needs of concrete users and students of concrete technology.

Priced at $11, the book may be obtained from the publisher, John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

Consulting engineers form new partnership

A new consulting engineering firm, Richardson, Gordon, & Associates, has offices at 3 Gateway Center, Pittsburgh, Pa., and 1411 Walnut St., Philadelphia. The firm includes the established offices of George S. Richardson; Richardson & Gordon; and Richardson, Morehouse, Ramsey & Fisher.

George S. Richardson, Bennett T. Gordon, James H. Morehouse, and James C. Fisher, formerly associated with the firms involved in the reorganization, are partners in the new firm.

Film on superhighways

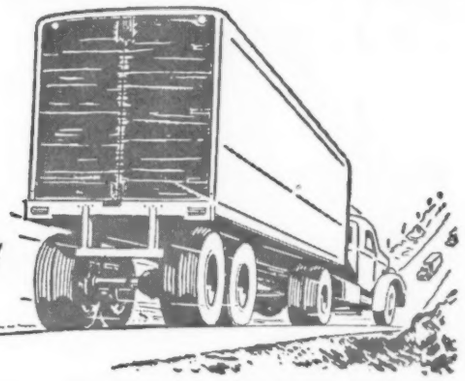
The effect construction of a superhighway has on a small town is shown in "The Long Street", a 16-mm color-sound film available from Ingersoll-Rand Co., 11 Broadway, New York, N. Y. Sequences made during work on the New York Thruway, the West Virginia Turnpike, and other construction sites show some of the work in building modern roadways.

The film is available to engineering organizations and contractors sales groups, and may be obtained from the Film Service Department of Ingersoll-Rand, Phillipsburg, N. J.

Caterpillar safety film

A new 20-minute film, released by the Caterpillar Tractor Co., Peoria, Ill., points out the dangers to both crews and motorists when roads are being reconstructed. Entitled "The Last Mile", the film is available from Caterpillar dealers or the company.

IF IT MOVES
WE CAN STOP IT!



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P SERIES POWER BRAKES

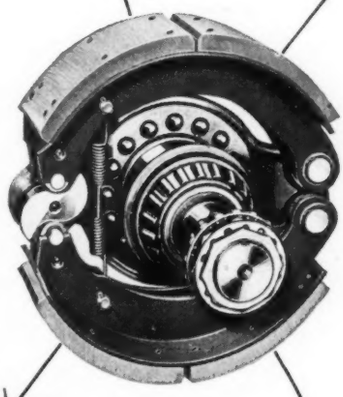
designed for heavy-duty automotive service

These rugged, heavy-duty power brakes are designed to give longer troublefree service on trucks, truck-tractors, trailers, buses, trolley-coaches and industrial and road equipment.

Superior design has made Timken-Detroit's "P" Series brakes the undisputed choice of leading vehicle manufacturers everywhere. Operating temperature is reduced sharply, cutting the biggest cause of brake wear. Other important features of the "P" Series brakes offer increased economy and performance for operators.

"P" Series power brakes are available in a complete range of capacities and sizes . . . to meet every operating need.

For additional information . . . with expert consultation, contact the Timken-Detroit Brake Division. Complete details and specifications on the "P" Series brakes are available. And, a staff of highly experienced engineers can assist you with any brake problem that you may have.



Easy accurate brake adjustments
Slack adjusters permit quick, simple adjustments. When adjustment is made, spring-loaded lock automatically engages adjustment screw to prevent screw backing off during service.

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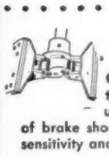
Open-type, malleable iron brake spiders eliminate air pockets and assure adequate internal ventilation for cooler running.



Constant Lift "S" Type Cam
Constant lift "S" type cam assures uniform application of brake shoes for maximum sensitivity and controllability.

Longer liner life with "Econoliner"
Timken Detroit Econoliners are tapered to provide greater strength and thickness at the center where wear is greatest.

Better brake drums
Sturdy, rugged brake drums are designed to supply maximum rigidity with rapid heat dissipating ability.

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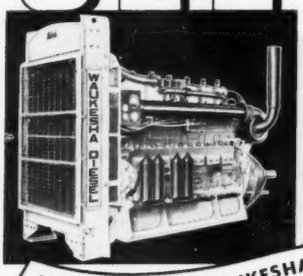
CONSTRUCTION CAMERA

Making another cut in a borrow area, a Euclid S-12 scraper picks up a heaping load of earth for use as fill on a road-widening job on U. S. 41 near Madisonville, Ky., as a Caterpillar D8 tractor with dozer gives it a pushing assist. Edward J. Carlisle, Madisonville, is the contractor.

A backhoe and a dragline with a Page 1¾-yard bucket team up to excavate a trench for two sewers—a 48-inch pressure line and a 60-inch gravity line. Both, serving the new sewage-treatment plant near Evansville, Ind., are being constructed by Santucci Construction Co., Chicago, Ill.

SEE your WAUKESHA DISTRIBUTOR



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For more facts, use Reader-Reply Card opposite page 18 and circle No. 305

New text on arc welding offers practical problems

A 200-page book of practical exercises and instructions for developing and improving the technique of arc welding comprise the second part of "Modern Arc Welding", published by Hobart Bros. Co., Troy, Ohio. The volume contains the complete exercises used at the Hobart trade school.

Designed as a textbook for operators, the book covers starting and manipulating the arc, welding common joints with bare electrodes, pipe welding, and other basic information.

Descriptive pictures, charts, and diagrams accompany the text.

The book, priced at $1, may be obtained from the Hobart Trade School, Inc., Hobart Square, Troy, Ohio.

AED issues new edition of equipment-rental rates

The Associated Equipment Distributors has published an 80-page book, "Compilation of Rental Rates for Construction Equipment", the seventh edition, containing the national average rental rates of 2,000 items of construction machinery. These rates were established by a 90-day AED survey of 700 distributors.

Copies of the book, popularly called the Green Book, may be purchased for $5 from the AED, 30 E. Cedar St., Chicago 11, Ill.

Bituminous pipe assn.

A new trade association of bituminous pipe producers has been organized, the Bituminous Pipe Institute. The Brown Co., Berlin, N. H.; Line Material Co., Milwaukee, Wis.; and Orangeburg Mfg. Co., Orangeburg, N. Y., are members.

Headquarters are at 370 Lexington Ave., New York.

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. . . at about 1/3 the cost of a new tooth each time!
A Messabi Iron Range open pit mine has found the way to keep its bucket teeth working longer.
The tooth illustrated has just been repointed for the 21st time; Seaco Hard-Surfacing Electrodes protect tip of wedge bar while workhardening. Manganal Wedge Bar was attached with Manganal Bare Electrodes for greater strength.
Next time your bucket teeth need repointing, try Manganal Wedge Bars and Electrodes, and Seaco Hard-Surfacing Electrodes.
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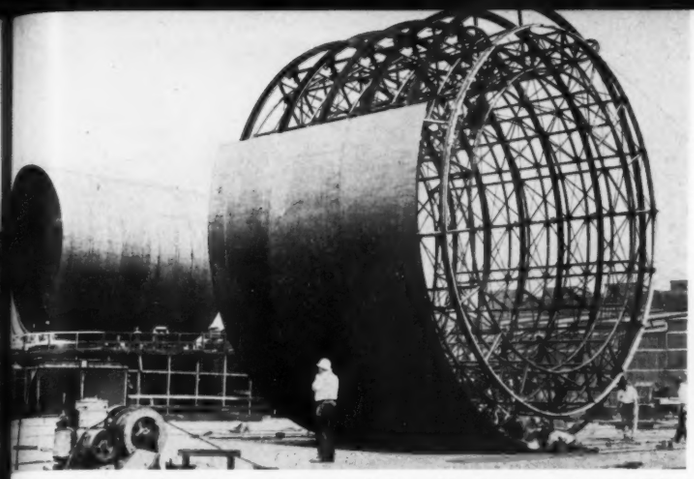
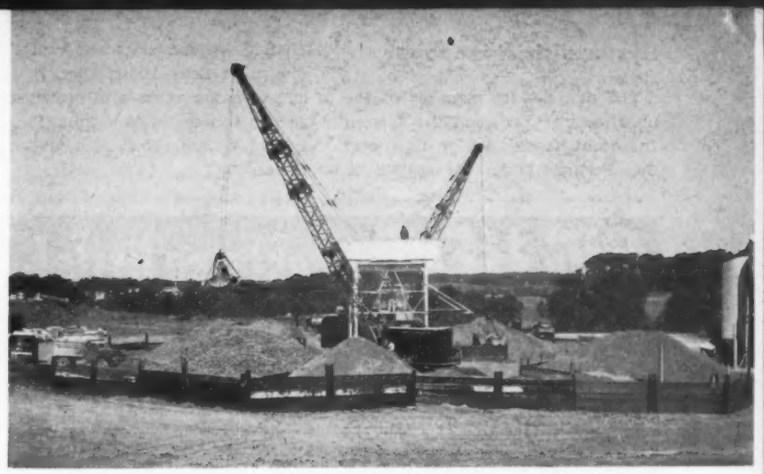
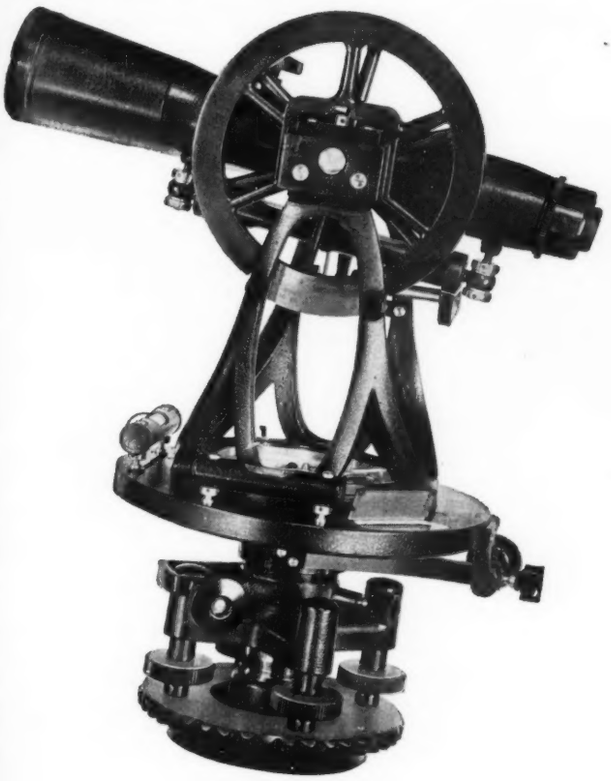


A method formerly used on rural water tanks is used by the New York Shipbuilding Corp. for the $130 million Patapsco River tunnel at Baltimore, Md. Steel sections 102 feet long are laid flat, then clamped to a shaping spool or spider while metal is welded. When the casting is complete, clamps and spider are removed.



A compact batching setup is used by James D. Morrisey, Inc., Philadelphia, Pa., to hold aggregate for paving work on the Northeast Extension of the Pennsylvania Turnpike. The Butler Bin is being charged by a Link-Belt 365 crane with 1½-yard bucket and a Northwest 80D with 2-yard bucket, while trucks are being loaded.



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Variable Power, now standard on all Gurley transits and levels, permits wide range of magnification with *one* eyepiece. Change your magnification to suit weather and light conditions. Built-in haze filter. *Write for "Facts on VP."*

W. & L. E. Gurley, Fulton & Station Streets, Troy, N. Y.

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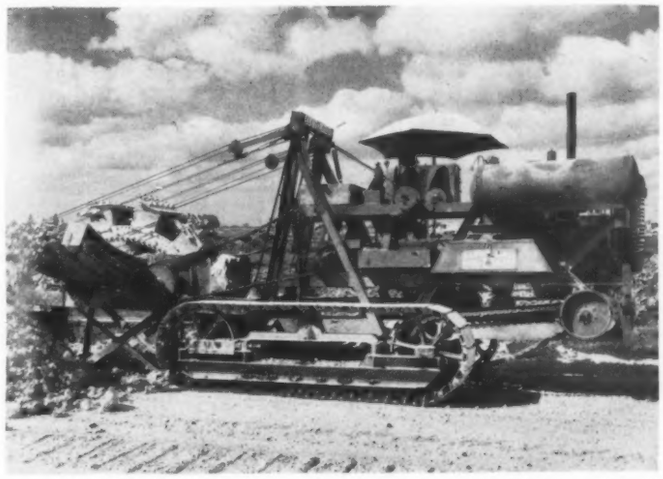


Cleveland "140" *halves* 90-day time limit...digs 44,500 feet Florida coral rock in 45 days

Under contract to dig over 8 miles of water line trenches within 90 days, C.B.S. Excavators of Miami finished the job in just half that time using a fast-moving Cleveland "140" Trencher.

The "140" cut trench through solid coral rock for over 40,000 feet of lines in Miami's Westview Homes Subdivision and for the mile-long main connecting the system to the water plant. Trench for the 6-, 8-, 10- and 12-inch pipe was 20 inches wide and 42 inches deep. In addition to the extensive coral rock, the trenching operation was further complicated by seepage of water into the partially-dug trench in some areas of the subdivision.

"No other machine can match it," owner P. F. Chambers says of his Cleveland "140". "For its size this machine can do more trenching than any other. We use the same machine for digging utilities lines and house footings. It really does a fine job of cutting to grade."

Your local distributor will show you how Clevelands do more—for less

THE CLEVELAND TRENCHER COMPANY • 20100 St. Clair Ave., Cleveland 17, Ohio

CLEVELAND

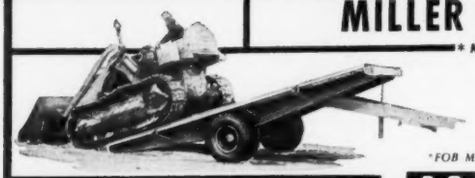
For more facts, use Reader-Reply Card opposite page 18 and circle No. 308

Hyster district manager

The new district manager of the north-central district of the Eastern Industrial Truck Division of Hyster Co., Portland, Oreg., is Donald R. Shaffer, the former manager of the company's Long Island City, N. Y., office. Shaffer works with five Hyster dealers situated in New York, Pennsylvania, Ohio, West Virginia and Canada.

BIG HELP... costs so little!*

MILLER Tilt-Top!



* Model "B" 10 Ton $1175.*

Optional equipment (priced extra): 16' long platform (8 x 14' standard) Hydraulic tilt control, 2 speed hand winch and electric brakes.

*FOB Milwaukee, Plus 8% Federal Tax

With this big Tilt-Top, ONE man can load, or unload, in less than TWO minutes! It cuts your loading time, ups your PROFIT time. Get this big help now . . . it's built to last, yet volume priced for less!

Miller Tilt-Top Trailer Co.
456 S. 92nd St., Milwaukee 14, Wis.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 309

The Mississippi Dig-A-Trench made by the Mississippi Engineering Co., Grand Mound, Iowa.

Tractor-mounted unit cuts clean trenches

■ A new trencher that mounts on late-model Ford tractors and digs a trench 7½ or 10 inches wide and up to 5½ feet deep is announced by the Mississippi Engineering Co., Inc., Grand Mound, Iowa.

The Dig-A-Trench features simplified design for lower-cost maintenance. Forward motion is provided by winch or by gear box, while the trencher is raised to transport position by a hydraulic cylinder. Capable of speeds up to 500 feet per hour, the unit is said to cut clean trenches quickly and easily.

The gear box, as well as a crumber and a backfill blade, are optional.

For further information write to the company, or use the Request Card at page 18. Circle No. 112.

Heavy-duty tarpaulin gets added strength

■ A new addition to its line of tarpaulins for the construction field—a heavy-duty AlumiZel tarp—is offered by H. Wenzel Tent & Duck Co.

Said to fill the need for a tarp that is easy to handle, yet can be used where extra strength is required, heavy-duty AlumiZel is made of a specially processed canvas. The formula is a scientific compounding of aluminum and Elastiseal containing new water and rot-resistant ingredients. As a result, these metallic-treated tarps are more flexible, even in sub-zero weather. They reportedly feature water resistance far superior to that of ordinary tarpaulins, and a heat retention of 43 per cent more than ordinary tarps. Heavy-duty AlumiZel tarpaulins also feature the Wenzel rope-in-hem construction for added strength.

For further information write to H. Wenzel Tent & Duck Co., 1035 Paul St., St. Louis 4, Mo., or use the Request Card at page 18. Circle No. 47.

L. B. Foster establishes warehouse in Buffalo

Facilities for both standard and lightweight steel sheet piling, steel H-bearing piling, and steel rail and track facilities have been provided in a new Buffalo, N. Y., warehouse of the L. B. Foster Co., Pittsburgh, Pa. The new warehouse will serve northern Ohio, upper New York, western Pennsylvania, and New England.

NEW OUTPUT ABILITY
with the
ALLIS-CHALMERS HD-11G
TRACTOR SHOVEL

2¼-yd capacity
105 net engine hp
32,000 lb
11-ft, 7-in. dump height

NEW POWER is provided by the modern, 105-hp Allis-Chalmers diesel. Tornado Turbulence and "follow-through" combustion mean cleaner burning and more power from fuel, as well as smoother engine performance and extra long engine life. Added power pays off in extra crowding and digging ability, fast work cycles.

NEW CAPACITY. Big 2¼-yd bucket is streamlined to roll in large loads more easily. Improved design cuts spillage, clean dumping saves time and effort shaking out loads. Optional 2¼-yd tip-back bucket rolls back 25 degrees at ground level, handles bigger loads of loose material.

NEW STABILITY. Extra-long track — with almost 9 ft of track on the ground — plus 8 truck wheels on each side and 32,000 lb of weight, give the HD-11G unusual stability, plenty of traction.

NEW-TYPE HYDRAULIC SYSTEM is simpler, safer, easier to maintain. Tank has fewer external fittings. Magnetic filters and suction-line screens protect entire system. Hydraulic pump offers fast action, long life.

NEW OPERATOR CONVENIENCE. The HD-11G features easily controlled, accurate bucket action; reduced lever pull with new-type clutch; full vision; roomy platform; foam rubber seat; 60-gal fuel tank.

NEW DEPENDABILITY AND SERVICING EASE result from such features as heavy-duty truck wheels and idlers; new, long-life track; new-type, long-lasting, ceramic master clutch lining; unit construction's quick disassembly and assembly of major parts; 1,000-hour lubrication intervals for roller bearing truck wheels, support rollers, idlers.

stop in soon and see the production-boosting HD-11G

CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

Stop in soon and see the production-boosting HD-11G at your Allis-Chalmers dealer's.

ALLIS-CHALMERS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 310

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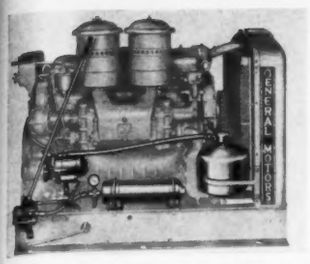


The new GM Hydrostarter eliminates the need for heavy-duty electrical starting systems on diesel engines.

Cold-weather starts for diesel engines

■ Split-second starting, even under adverse weather conditions, is claimed with a new diesel-engine hydraulic starting system developed by General Motors. The unit is available already installed on new GM Detroit Diesel engines or as auxiliary equipment for those now in operation.

The General Motors Hydrostarter is said to eliminate many replacement and maintenance costs common to conventional starters. Its efficiency is not affected by temperature, humidity, or altitude. Even in zero temperatures, the unit attains cranking speed almost instantly.

At the press of a lever, gas pressure built up behind a piston in a factory-sealed accumulator cylinder forces oil through a hydraulic starting motor. When the engine starts, an engine-driven pump forces the oil back into the cylinder, recompressing the gas, and the unit is thus automatically recharged for the next start.

The initial charge is accomplished by means of a hand pump. The unit is then self-sustaining, but the hand pump is available for recharging the cylinder if it should become necessary. This pump can also be used to advantage in "rolling" the engine slowly to various positions when valve, injector, or other engine adjustments are made.

For further information write to The Detroit Diesel Engine Division, General Motors Corp., 13400 W. Outer Drive., Detroit 28, Mich., or use the Request Card that is bound in at page 18. Circle No. 33.

Civil service exam for highway engineer jobs

A written examination for highway engineer positions with the Bureau of Public Roads will be given by the U. S. Civil Service Commission. Applicants must have completed at least three years of a professional civil engineering curriculum or expect to complete studies by September 30, 1956, or they must have at least four years' progressive experience in civil engineering. Positions pay from $3,415 to $4,345 a year.

Further information and application forms may be obtained from any post office from the commission. Applications must be filed no later than January 24, 1956, with the Board of U. S. Civil Service Examiners, Bureau of Public Roads, Department of Commerce, Washington 25, D. C.

Pivoting load hooks for straddle carrier

■ A straddle carrier with load hooks which pivot inward to permit carrying without bolsters has been introduced by the Ross Carrier Division of Clark Equipment Co.

In place of the conventional rigid load hooks, the new carrier has four forks, two on each side, which swing in at right angles and meet in the center to form two arms under the load. Pivoting movement is controlled by hydraulic cylinders actuated by a lever on the left side of the driver's seat. A second level hydraulically controls the vertical movement of the hooks. Since the hooks extend under the full width of the load, no bolsters are necessary. Permanent skids or stringers are required only at the pickup and delivery points.

The Series 81 pivoted hook carrier is built on the same frame as the Ross Series 81 carrier. It has a capacity of 20,000 pounds, road speeds up to 40 mph, four-wheel steering, and a four-speed synchromesh transmission. The carrier is available in six models capable of carrying loads ranging in height from 48 to 66 inches and in width from 40 to 52 inches.

For further information write to the Ross Carrier Division, Clark Equipment Co., P. O. Box 358, Benton Harbor, Mich., or use the Request Card that is bound in at page 18. Circle No. 78.

SWENSON SPREADERS FOR ICE CONTROL

SPREADS SALT 200 LBS. PER MILE OR IN ANY DESIRED AMOUNT
Lays a Narrow Strip or Full Traffic Lane

Handles all granular materials — salt, cinders, sand, calcium chloride, rock chips. Spreads at speeds up to 30 M.P.H. Clutch-controlled flow: steady or intermittent for hills and intersections.

Write for complete information

SWENSON SPREADER & MFG. CO.
LINDENWOOD, ILLINOIS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 311

The American Road Builders' Association

invites you to Miami Beach to attend its

54th ANNUAL CONVENTION

EXHIBIT OF HIGHWAY MATERIALS and SUPPLIES

Both Meetings and Exhibits will be held in the

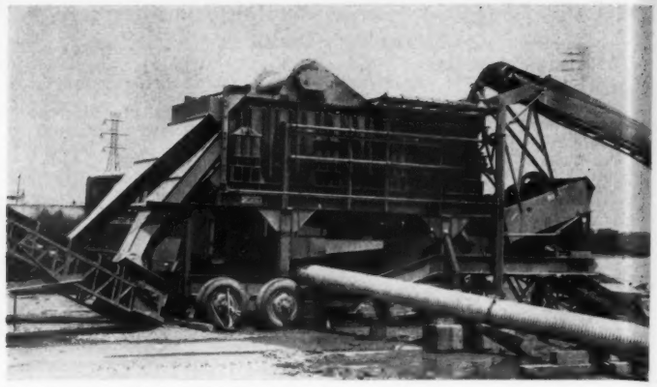
Miami Beach Auditorium

JANUARY 11-14, 1956

The Nation's leading legislators, engineers, and road builders will address this Meeting—the most important in ARBA's history. Write to ARBA in Washington for information on hotel reservations and Exhibit arrangements.

American Road Builders' Association • World Center Building • Washington 6, D. C.

Contractors and their personnel who make periodic inspection visits to construction sites will find the Aero Commander Model executive airplane a convenient means of transportation. Capable of 260-mph top speed, the craft carries 6 or 7 passengers. For details circle No. 100 on card at page 18, or write to Aero Design & Engineering Co., Tulakes Airport, Box 118, Bethany, Okla.



This largest portable washing plant of its kind, the Universal Model 869, has a diameter of 36 inches, and a 25-foot-long double-screw washer with a 6 × 20-foot three-deck screen. The plant is used with large-capacity Universal crushing equipment. For details circle No. 94 on card at page 18, or write to Universal Engineering Corp., 625 C. Ave. N. W., Cedar Rapids, Iowa.

SHAWNEE®
earth moving tools

PATENT NOS.
2,669,367
2,682,346

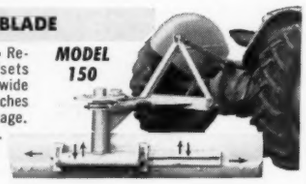
SHAWNEE SCOUT 70

This Shawnee Ditcher available for mounting on 20 different tractors. Digs to a depth of 12 feet, loads to a height of 8 feet, 6 inches.

SHAWNEE REAR BLADE

• 9 angle adjustments • Reversible • Tilts and Offsets • Heavy Moldboard. 6-ft. wide sliding moldboard, 15 inches high. Fits all 3-point linkage. Replaceable cutting edge.

MODEL 150



SHAWNEE "SPECIAL" LOADER

Adaptable to almost all tractors. Depending on tractor installation, it has one or two bucket cylinders. 2,000 lb. lift to a 9 ft. dumping height. 2,500 lb. break away. All welded construction. Removes in 10 minutes.

PATENT PENDING

SEND COUPON FOR FREE LITERATURE

AD 517

SHAWNEE® MANUFACTURING COMPANY, INC.
517 M N. Topeka Ave., Topeka, Kansas

Please send me FREE LITERATURE on:
☐ Shawnee Scout 70 ☐ Shawnee Rear Blade ☐ Shawnee "Special" Loader

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CITY_____ STATE_____

For more facts, circle No. 313

PERFORMANCE TEST — NEW YORK INTERNATIONAL AIRPORT**

NEW Carbide Bonded* Blades...
...cut costs 51%

HARDEST, MOST DURABLE CONCRETE SAWING BLADE EVER MADE! Sounds like a big order doesn't it? Well it took Consolidated years, to successfully put DIAMONDS ... the hardest natural stone, IN CARDBIDE ... the toughest ... man-made metal.

THE RESULT ... a versatile concrete sawing blade that lasts 2 to 3 times longer than conventional diamond blades. Longer blade life means lower costs (up to 51%) ... lower costs mean lower bids ... lower bids mean more contracts ... more profit!

WRITE TODAY for full information and prices

Consolidated DIAMOND TOOL CORP.
320 Yonkers Avenue, Yonkers, N. Y.

*Patents Pending. **Detailed test available on request.
CONCRETE AND MASONRY CUTTING BLADE DIVISION

For more facts, circle No. 314

The First Reference Book to Cover Every Aspect of

Excavating and Earthmoving

MOVING THE EARTH

By Herbert L. Nichols, Jr. a contractor of 20 years experience who is a recognized authority in this field

- detailed descriptions of the operations an excavating contractor must perform on literally hundreds of different jobs
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2500 DRAWINGS
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For more facts, circle No. 1

New method of figuring truck tolls on turnpike

The system of figuring truck tolls on the Pennsylvania Turnpike has been changed and will go into effect January 1 of next year. The new toll rate will be based on the combined weight of a vehicle and its load, rather than on the former basis of license classification.

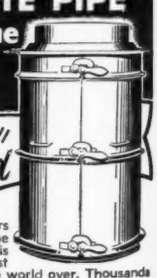
An electrically operated weighing device will instantaneously count a truck's axles, total its gross weight, and print a ticket showing the toll collector the vehicle's weight class.

Data on puller tools

■ Factory approved tools and tool sets for performing maintenance and service jobs on LeTourneau-Westinghouse machinery are described in a bulletin from the Owatonna Tool Co. On-the-job illustrations show OTC manually and hydraulically operated tools removing and installing axles, gears, bearing cups, pinions, etc.

To obtain Bulletin No. LW-55 write to the Owatonna Tool Co., 381 N. Cedar St., Owatonna, Minn., or use the Request Card at page 18. Circle No. 69.

For the FINEST CONCRETE PIPE You Need the FINEST FORMS!



THE "Quinn" Standard

Backed by over 40 years of reliable service, the QUINN STANDARD is recognized as the finest concrete pipe form the world over. Thousands of pipe manufacturers, from the smallest to the largest, look to Quinn for equipment to produce the finest concrete pipe at the lowest possible costs.

• QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry process. Sizes for pipe from 10" to 120" and larger. Tongue and groove or bell end pipe in any length desired.
WRITE TODAY for complete information and estimates.

Also manufacturers of
QUINN CONCRETE PIPE MACHINES

Quinn WIRE & IRON WORKS BOONE, IOWA

For more facts, circle No. 315

World's largest towing winch, built by the Hyster Co. for use on the Cat D9 tractor, develops a line pull of 76,000 pounds. Featuring a constant-mesh transmission, the Model D9A handles 269 feet of 1⅛-inch cable, or 217 feet of 1¼-inch line. For details circle No. 92 on card at page 18, or write to the Hyster Co., 2902 N. E. Clackamas St., Portland 8, Oreg.

Oakland, Calif., pedestrians gaped as this Noble-Mobile batching plant traveled through the city's downtown area recently. Designed for greater than 60-yards-per-hour output, the plant-on-wheels may be hauled over the highways within legal limits. For details circle No. 93 on card at page 18, or write to the Noble Co., 1860 Seventh St., Oakland 20, Calif.

Caterpillar recommends use of transmission oils

The Caterpillar Tractor Co., Peoria, Ill., now recommends that only an extreme pressure transmission oil conforming to the requirements of Mil-L-2105 specifications be used in the final drive compartments and transmissions of D8 tractors torque converter drive (Series D), D8 tractors direct drive (Series E), D9 tractors and No. 583 pipelayers. The company had formerly recommended the use of straight mineral oils.

The Mil-L-2105 oils which are filterable may also be used in the transmissions and final drives of other track-type and wheel-type tractors and motor graders.

No change has been made in the company's viscosity or grade recommendations.

Four-wheel-drive unit

■ Publication of a new brochure which describes the Napco four-wheel drive for Chevrolet trucks is announced by the Napco Products Division of Napco Industries, Inc.

According to the literature, the Powr-Pak drive may be readily changed from one truck to another, is easily handled, installed without damage or distortion to the truck frame, operates economically, and is serviced with parts readily available through Chevrolet dealers.

To obtain this literature write to Napco Products Division, 834 N. Seventh St., Minneapolis 11, Minn., or use the Request Card that is bound in at page 18 of this issue. Circle No. 198.

SIGHT LEVELS INSTANTLY!
STRATEX SURVEYING

Hand Level $12.00

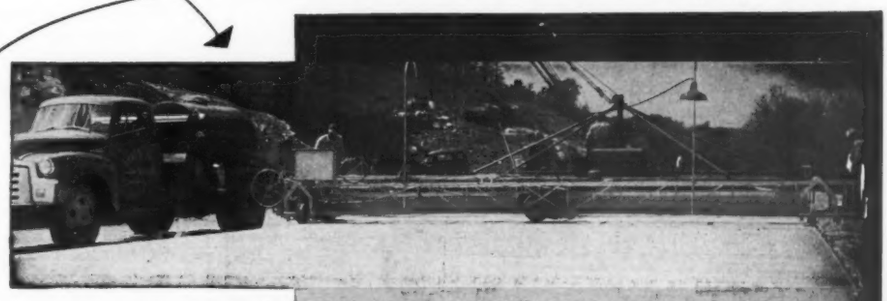
Positive slopes, elevations, drainage—farm, forest or construction. Built for life—simple to use—lets you plan, build, excavate with confidence; adjusts instantly from outside of instrument even in gusty weather! **Put it to work now.** It pays for itself on one job—fully guaranteed. $2 cash, bal. C.O.D., or $12 with order, we pay charges. Saddle leather case included. **FREE** price list.

STRATEX INSTRUMENT COMPANY, INC.
3515CE SUNSET BLVD., LOS ANGELES 26, CALIF.

For more facts, circle No. 316

WORLD'S LARGEST CONCRETE ROAD CUTTING JOB PROVES SUPERIORITY OF *CARDINAL BLADES!*

1,000,000 feet of West Virginia turnpike cut in record time—at lowest cost in history!



In cooperative effort with William F. Middlestadt of Seals, Inc., of Baltimore, who furnished equipment and personnel, CARDINAL NON-BRAK BLADES cut a 68 mile x 1½ inch longitudinal joint in this new two lane highway, and a 24 foot transverse joint every 18 feet . . . total—1,000,000 lineal feet through limestone aggregate. Job completed with CARDINAL NON-BRAK BLADES in record time at a record low cost.

Cardinal NON-BRAK BLADES
Lowest initial cost on the market—reinforced with steel and fiberglas for better cut and longer life.

Cardinal DIAMOND BLADES
33⅓% more cutability than conventional blades—25% lower initial cost.

When you work with CARDINAL, you work with blade men who know the concrete cutting business . . . men who will frankly tell you when a rugged, low-cost CARDINAL NON-BRAK BLADE will do the job on green concrete, at less cost than a diamond blade . . . or, when a CARDINAL DIAMOND BLADE will give you the best deal, cost-wise, on aged concrete or other hard specifications. More footage per day . . . less cost per cut—that's the kind of guarantee that makes good sense. Call, write or wire, today!

Cardinal
ENGINEERING CORPORATION
World's Largest Exclusive Manufacturer of Concrete Cutting and Masonry Blades
144 BURNSIDE STREET, PHILADELPHIA 27, PA., U. S. A
Branches or Distributors in Most Principal Cities

For more facts, use Reader-Reply Card opposite page 18 and circle No. 317

This Maine Steel Corp. hydraulic loader mounts on a Ford Model 850 tractor to do a variety of loading and material-handling jobs. The Overhead loader uses a ⅜-yard bucket and employs a special "push-tilt" hydraulic action to provide full bucket loads. For details circle No. 97 on card at page 18, or write to Maine Steel Corp., 169 Front St., South Portland, Maine.

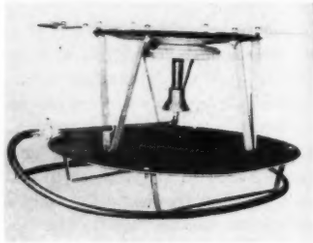
Maintenance and equipment-storage shops are among recommended uses for a line of prefabricated steel buildings manufactured by Steelcraft Mfg. Co. Tapered rigid frames form the structural system of these units, which are quickly and easily erected. For details circle No. 96 on card at page 18, or write to the Steelcraft Mfg. Co., 9017 Blue Ash Road, Rossmoyne, Ohio.

Portable heating unit has unusual design

■ Unique construction said to assure wide distribution of heat is the feature of the new Redi-Heater portable salamander manufactured by the Grimm Brooder Mfg. Co., Toms River, N. J. The LP-gas-operated heater has a capacity of 25,000 Btu.

This unit is constructed of 16-gage steel and stands 16 inches high. Diameter is 24 inches. It is recommended for effective space heating on construction projects and as an emergency heating unit.

Equipped with a 10-foot hose, the Redi-Heater may be used with any desired hose extension, available at slight extra cost.



The new Redi-Heater portable salamander.

For further information write to the company, or use the Request Card at page 18. Circle No. 38.

New stainless steel contains little nickel

A new grade of stainless steel, containing little or no nickel, was described in a paper read before the Cleveland Regional Technical Meeting of the American Iron and Steel Institute by Dr. Dennis J. Carney. According to Dr. Carney, more nitrogen is used in the nickel-free and low-nickel stainless steels than was thought possible prior to this study.

The discovery is expected to solve some rolling and finishing problems.

HOW TO HAUL AIR UNDER PRESSURE

It's no problem to deliver air under pressure wherever you need it on construction jobs. With Naylor Spiralweld pipe, you can run lines anywhere—even over the roughest terrain. Light weight makes Naylor easy to transport, handle and install. The lockseamed, spiral-welded structure that distinguishes Naylor makes it outstanding in performance. Makes it extra strong! Extra safe! More economical to use! For high and low pressure air and water lines, you'll do better in every way with Naylor Spiralweld pipe. Write for Bulletin No. 507.

NAYLOR PIPE

NAYLOR PIPE COMPANY

1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 350 Madison Avenue, New York 17, New York

For more facts, use Reader-Reply Card opposite page 18 and circle No. 318

Save gas, gears, tires.....

GET MAXIMUM USE FROM YOUR 4-WHEEL DRIVE!

Jeep

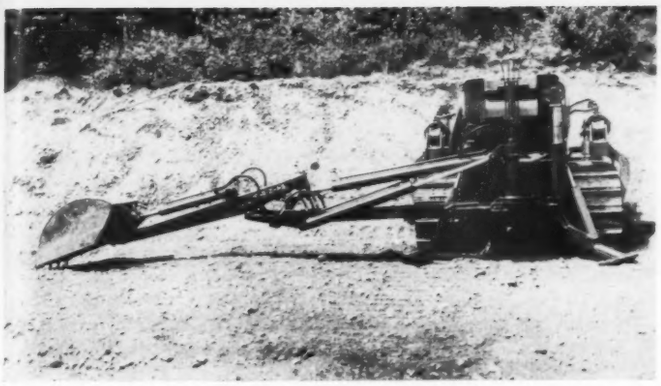
WARN *Automatic* HUBS MAKE 2 TRUCKS OUT OF 1

Road or no road, Warn *Automatics* give your 4-wheel drive sensational new economy, driving ease and mobility. Your 4 W. D. is automatically a "free-wheeling" 2-wheel drive, or 4-wheel drive AS YOU SHIFT! Use it as a town car, "pick-up" or work horse in and out of mud, sand; on and off the highway. It "free-wheels" or "4-wheels" to suit conditions AS YOU SHIFT! What's more, you can drive at *high speed* in 4-wheel drive on any terrain! Automatic (and Locking) models for *all* makes of 4 W. Ds. from ½ to 1½ tons. Ask your *authorized* factory truck dealer for a FREE DEMONSTRATION of amazing Warn Hubs, or write:

WARN *Automatic* HUBS

WARN MANUFACTURING CO., Riverton Box 6064-C12, Seattle 88, Washington

For more facts, use Reader-Reply Card opposite page 18 and circle No. 319



A 190-degree swing radius which permits right-angle digging is one of the important features of the Wain-Roy H-400 backhoe, designed specically for the International TD-9 tractor. The hydraulically controlled attachment has a 15-foot-4-inch reach in this position. For details circle No. 99 on card at page 18, or write to Wain-Roy Corp., Hubbardston, Mass.

Working 50 to 60 hours per week, this Gradall excavates for highway bridge piers in sandy soil along a stretch of the Indiana Turnpike. Thirty-six-inch and 60-inch buckets are used in this operation. The rig also grubs, removes trees, trenches, and lays pipe. For details circle No. 98 on card at page 18, or write to Warner & Swasey Co., 5701 Carnegie Ave., Cleveland, Ohio.

Direct drive adds speed, cutting ease to new saw

■ A new direct-drive chain saw, the Titan 70, is designed for faster, easier, safer cutting, according to the manufacturer, Titan Chain Saws, Inc., 2700 Fourth Ave. S., Seattle 4, Wash.

The Titan 70 direct-drive chain saw.

Because of the direct drive, the Titan 70 is said to lose no power through transmission gears. Its higher chain speed reportedly makes possible extremely fast, effortless boring. Since it carries itself through the cut, this new saw greatly reduces operator fatigue.

Features of the new tool include a 360-degree handlebar, a trigger in the pistol grip which automatically controls the engine and simultaneously delivers a constant oil flow to the high-speed chain, a diaphragm carburetor which permits all-angle cutting, and an automatic clutch which engages at 2,350 rpm. The Titan 70 comes complete with fast-cutting BlueJet chain and a choice of bars from 22 inches to 44 inches.

For further information write to the company, or use the Request Card at page 18. Circle No. 63.

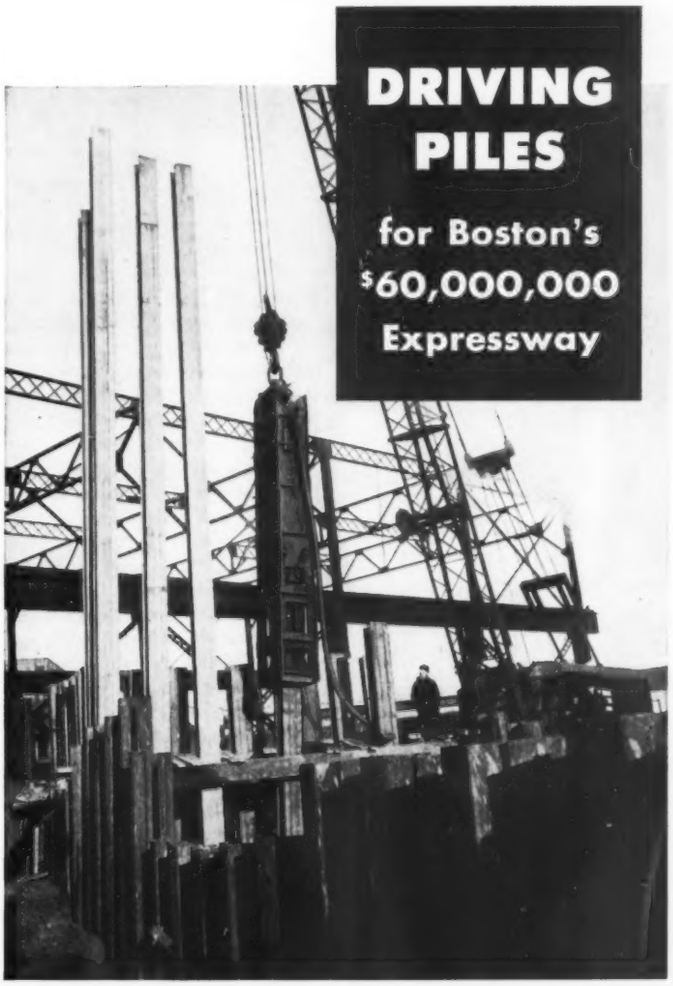
Dixie Cup appoints new sales manager

A. G. Malone has been appointed national sales manager for water cup, government, and transportation sales by the Dixie Cup Co., Easton, Pa., according to a recent announcement from the company. Mr. Malone has been manager of the company's eastern, Canadian, west central and Nashville territory.

Rolatape, Inc., manufacturers of measuring wheels- and their many dealers wish to one and all- sincere SEASON GREETINGS!

☆ Rolatape, Inc., Santa Monica, California ☆

For more facts, use Reader-Reply Card opposite page 18 and circle No. 320



This McKiernan-Terry Type S8 Single-Acting Pile Hammer is shown driving 89-lb. H-piles for piers of the double-deck high-level bridge over the Charles River for this outstanding traffic artery.

Here, as in many thousands of foundation jobs . . . large and small . . . for bridges, dams, buildings, piers, highways, etc. . . . contractors use McKiernan-Terry Single-Acting and Double-Acting Pile Hammers and Double-Acting Pile Extractors to assure speedy and economical work.

Write for bulletins describing McKiernan-Terry Pile Hammers and Extractors. MK367

McKIERNAN-TERRY CORPORATION

82 Richards Avenue, Dover, New Jersey

Manufacturing Engineers • Plants: Harrison, N. J., Dover, N. J.

Also builders of Coal and Ore Unloaders and Bridges, Grab Buckets, and Special Machinery

For more facts, use Reader-Reply Card opposite page 18 and circle No. 321

The new Model HAH Payloader has a heaped capacity of 1 cubic yard. ▼

How wire rope is made

■ A booklet describing the steps involved in the manufacture of its wire rope is available from the E. H. Edwards Co. Illustrated are such processes as heat-treating, cleaning, drawing, galvanizing, testing, tagging, storing, spooling, stranding, and closing. The development of "endless" wire of uniform structure into finished wire rope is traced with both text and pictures.

To obtain this booklet write to E. H. Edwards Co., Butler Road and Industrial Way, South San Francisco, Calif., or use the Request Card at page 18. Circle No. 185.

Changes at Timken

John Rundt and Alva Kopatz have been appointed chief engineer and chief draftsman, respectively, of the Division of Research and Development, Timken Roller Bearing Co., Canton, Ohio.

J. W. Weir, Cleveland district manager of the Industrial Division, has retired after 36 years of service.

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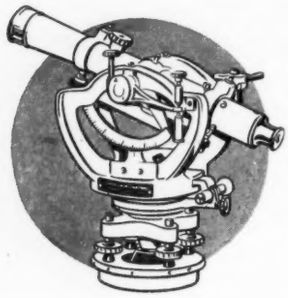

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For more facts, circle No. 322

One-yard tractor-shovel with front-wheel drive

■ A new, larger two-wheel-drive Payloader tractor-shovel has been announced by The Frank G. Hough Co. The new Model HAH has a struck capacity of ¾ cubic yard and a heaped capacity of 1 cubic yard.

Bucket breakout action on the new Payloader permits 40-degree tip-back at ground level. The machine has a breakout force of 4,500 pounds, a lifting capacity of 4,000 pounds, and a carrying capacity of 3,000 pounds at 4 mph. A short turning radius and rear-wheel power steering provide fast maneuverability. The high lift of 7 feet 9 inches facilitates loading of trucks or elevated hoppers.

Torque-converter drive and four-speed full-reversing transmission are combined with a gas engine developing 57 horsepower. Travel speeds range from 0 to 14 mph in forward and from 0 to 23 mph in reverse.

The new bucket-arm design is said to contribute to operator safety and permit carrying heaped loads at a lower level. Stability is further improved through the use of a hydraulic accumulator which absorbs load shocks. A sealed and pressurized hydraulic system has been incorporated, and double-acting rams operate the boom arms and bucket.

For further information write to The Frank G. Hough Co., 762 Seventh St., Libertyville, Ill., or use the Request Card that is bound in at page 18. Circle No. 27.

Concrete form clamp

■ The Taper-Tye form clamp, which the manufacturer claims will save contractors forming time and cut labor costs, is described in a bulletin available from H. J. Krueper Co., 535 S. Clarence St., Los Angeles 33, Calif.

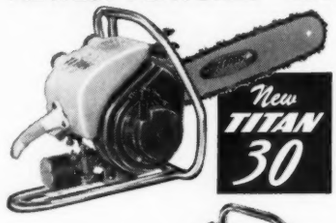
The literature points out that the Taper-Tye clamp, available in two types, consists of a continuous tapered rod which is easily driven from one side of the form and quickly assembled as a clamp. One rod is adjustable for from 6 to 14-inch-wide pours, and combinations are available for pours up to 46 inches wide.

To obtain this bulletin write to the company, or use the Request Card at page 18. Circle No. 192.

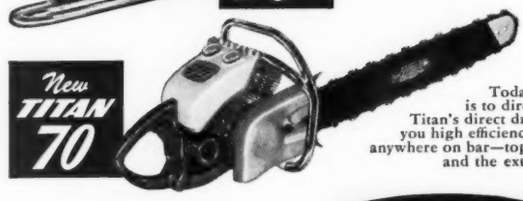
Cut Faster With... TITAN'S 2 Great New Saws

HIGH POWER DIRECT DRIVE

NEWEST FEATURES—SMOOTHEST CUTTING



Lightweight TITAN 30 with direct drive gives you full power—no transmission so no power loss! Famous BlueJet Chain gives smoother cutting. Trigger in pistol grip controls engine and automatically delivers constant oil flow to chain. Plunge Cut Bow also available.



Today's trend is to direct drive. Titan's direct drive gives you high efficiency cutting anywhere on bar—top, bottom and the extreme tip.

New direct drive TITAN 70 really goes after the big stuff! MOST POWER PER POUND. Easy starting. Newest automatic oiling system. Higher efficiency cutting anywhere on bar with famous BlueJet Chain. Get bigger timber faster with 22" to 44" bars. Does more work with less upkeep. See Titan in action today!

TITAN CHAIN SAWS

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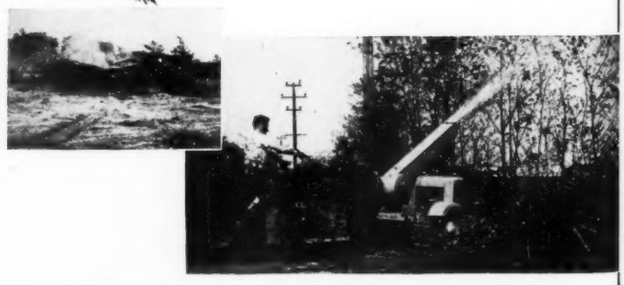
For more facts, use Reader-Reply Card opposite page 18 and circle No. 323

GOT A BURNING PROBLEM?



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ASPLUNDH CHIPPER COMPANY

505 York Road **Jenkintown, Pennsylvania**

For more facts, use Reader-Reply Card opposite page 18 and circle No. 324

The new RD-220-H diesel-powered tractor is one of nine new diesel units added to its line of heavy-duty trucks by International Harvester Co.

Nine new diesel trucks for heavy-duty service

■ Nine diesel-powered trucks ranging from 26,000 to 60,000 gvw have been added to the heavy heavy-duty line manufactured by the motor truck division of International Harvester Co. The new models include four in the four-wheel RD-220-H series, three in the six-wheel RDF-210-H series, and two six-wheel off-highway models—the RDF-214-H and RDF-230-H.

Standard power plant in the new models is the Cummins HRB-600 engine, developing 165 horsepower. The clutch is a 14-inch two-plate type, and the transmission is five-speed direct-in-fifth. Length from bumper to center of front axle has been increased by approximately 12 inches to accommodate engine length, while wheelbase and other dimensions remain the same as for comparable gasoline-powered models.

Numerous diesel-engine, wheelbase, transmission, rear-axle, brake, chassis, and electrical-equipment options are available.

For further information write to International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 5.

New oil clutch for the D4

■ A new oil clutch for the D4 tractor has been announced by Caterpillar. Similar in design to the oil clutches in the D6, D7, D8, and D9 tractors, this new unit features metallic-faced disks, a self-contained gear-type pump, and oil-supply clutch brake for easy gear shifting.

The three metallic-faced plates on the new D4 clutch are separated by oil films at all times, except for the last revolution or two as the clutch is engaged. Thus, the company points out, there is little opportunity for wear and heating to occur. The oil system includes an oil pump with screened inlet and passages which carry oil to all parts of the clutch.

Clutch adjustment, while easily made, is seldom required with this unit, according to the manufacturer. Plate replacement should be as infrequent as engine overhaul, under normal conditions, Caterpillar reports.

The oil clutch is especially recommended in bulldozing work and other jobs where frequent engagement, disengagement, and slipping of the flywheel clutch are necessary.

For further information write to Caterpillar Tractor Co., Peoria 8, Ill., or use the Request Card at page 18. Circle No. 80.

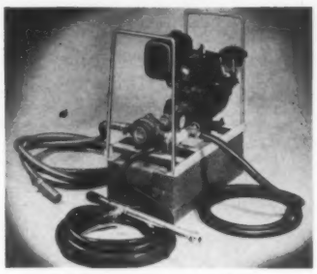
For more facts, circle No. 325→

Compact spraying unit for weed-control work

■ A portable spraying unit especially designed for roadside maintenance work is available in two models from the Larson Machine Co., Princeville, Ohio. The spraying unit is said to be highly effective in weed-control work.

In one model, a 3-hp engine drives a high-speed nylon roller pump to develop 150 pounds of pressure. A larger unit has a 3½-hp engine and develops 300 pounds of pressure.

The entire unit is housed in a welded steel frame, and may be easily mounted in the rear of a maintenance truck.



For further information write to the company, or use the Request Card at page 18. Circle No. 191.

8250 pay yards daily

with 11 C Tournapulls on 2.4-mile cycle

After spreading sand in wet, soft fill, C Tournapull makes turn and starts back on rough 1.2-mile trip to borrow-pit. "C Tournapulls will turn shorter on fill giving them an advantage over others, especially in wet fill," says Supt. J. W. Franks.

"Our judgment was sound when we selected 'C's' for the job," says Supt. J. W. Franks

Public Constructors Inc., Pleasantville, New Jersey, are keeping production ahead of schedule, despite tough conditions on the 2¼-million yard contract for the Garden State Parkway in Cape May County. Working continuously in loose, shifty, 100% coarse-to-fine white sand, their 11 C Tournapulls are playing a major role in speeding the job. The "C's" performance is due to:

1. Ability to load, haul, and spread the abrasive material faster and easier than similar units made by other companies.
2. 30 mph speed which saves time and money on the tough, long hauls common to this job.
3. Fewer repairs and 10% more "job availability" through less downtime than other rigs.

2.4-mi. cycle every 10½ min.

Here's a typical C Tournapull work day: Machines are push-loaded in a sand borrow-pit by HD20 crawlers. Loading is difficult because of loose, shifty footing. After loading, the units climb a 3% grade out of pit, make sharp, 90° right turn, and start the 1.2-mile haul to North Lane, or fill area. The 70 to 95' spread is in wet, soft, sandy fill which makes maneuvering difficult. After spreading material, 180° turn is made for return trip. The 2.4-mile cycle averages about 10½ minutes. Each unit carries 9 loads, averaging 14 pay yds. per load, every 1½ hours. Working 55-minute hour each "C" moves 750 yards per day. The entire fleet of 11 "C's" move 8,250 pay yards daily.

Job 15% ahead of schedule

Considering all the adverse conditions encountered throughout the job, production has still been running 15% over estimates, based on these 11 Tournapulls. Supt. John W. Franks says, "Our earthmoving production records show that our Tournapulls are giving a great performance day-after-day. Our judgment was sound when we selected 'C's' for the job."

Why not try these advantages on *your* next job? Let us compare the "C" by operating it alongside one of your present machines. You'll find it loads faster, hauls faster, and returns faster, especially in tough-to-handle materials. Write or phone for a demonstration today. There's no obligation.

Will scrapers uncover buried pirate treasure?

Where Captain William Kidd, famed British buccaneer who was hanged for piracy in 1701, buried his ill-gotten gains—or if he buried them at all—has long been a mystery. Legend has it that some of his loot is buried in eastern New Jersey, along the route of the Garden State Parkway, near the work-site shown above. One Monmouth County property owner believed in this so strongly that when he sold some land to the N. J. State Highway Authority recently, he insisted upon reserving a claim to any such riches that might be uncovered during construction. But, so far—and the parkway is nearly completed—no buried treasure of any kind has been found on this property—or any other.

(Taken from Better Roads, April, 1955 issue)

Tournapull—Trademark Reg. U.S. Pat. Off.
P-836-H-b

NOW . . . a size Tournapull TO FIT YOUR NEEDS

Model B . . . 23 yds. heaped Model C . . . 16 yds. heaped Model D . . . 7 yds. heaped

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

FACTS ON FINANCE

by WILLIAM HURD HILLYER

Heavy construction funds became freely available in the November municipal bond market, reversing a movement which had all the earmarks of a trend. One heartening indication that more money is available was the drop of 1 basis point in the "Bond Buyer" average compilation of interest yield on 20 representative issues at the beginning of the month. Prior to that time, this rate had been rising, making borrowing more and more difficult.

A record-breaking amount of bonds bought—for the amount of the issue and the size of the syndicate—was the $415 million Illinois State Toll Highway Commission revenue bonds. Well absorbed when they were offered, these were selling at a premium the next day. Within 24 hours afterward, $122 million in federal housing bonds were offered, and $110 million of them were taken by two large New York banks on a 2.4-plus-per-cent income basis. This compares favorably with the rate on the previous federal sale in midsummer of this year. More than half the new bonds were bought by investors the week after they were offered.

A significant trend as far as highway construction is concerned is price advance in toll-road issues. The Illinois Toll Road's 3¾ per cent bonds were up around $20 per $1,000 piece at last accounts. Earnings, too, are on the rise. The Maine Turnpike, in its September statement, showed an 11 per cent increase in revenue over the previous year.

Top financial observers believe the easier sale of municipals is due largely to a growing conviction that the Federal Reserve will not tack another raise onto rates it charges banks for borrowed money. Member banks have been able to pay back some of their borrowings from the Federal Reserve, but right now their loans to New York businesses are up contra-seasonally. For these reasons, New York City banks see neither a crisis nor the return of easy money ahead.

Other factors pointing the way toward an increased amount of money available for construction purposes are the popularity of state and municipal bonds and the growth of savings deposits. Right now, banks which have sold huge blocks of U. S. securities to raise cash for their commercial borrowers are still hanging onto state and municipal bonds. The "Bond Buyer" compilation of municipal holdings for 100 large banks shows a new addition of $92 million as compared with the same quarter for 1954.

Savings deposits have increased $4 million from mid-1954 to mid-1955. This is a 6 per cent increase in savings, as compared with a gain of less than 5 per cent in checking accounts during the same period. Individuals have also poured $1.3 billion into private insurance during the second quarter of this year—an amount that is $100 million more than was recorded for the similar period in 1954. Their government insurance equity has now mounted to $1.2 billion, the highest in three years. During the fiscal year, also, state banks added a billion dollars to their holdings of state and municipal bonds. This represents nearly 20 per cent of the total. All these items, totaling some $7.5 billion, are contributing to the easier flow of funds into public securities, offsetting the tighter credit prevailing in commercial and consumer lending.

Styles illustrated
50-00 Jacket
51-05 Pants
53-15 Hat

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Wears like iron — takes endless rubbing, scraping, snagging, and still gives full protection.
100% Waterproof — made with top quality base fabric saturation-coated first and then coated with 6 coats of Neoprene Latex.
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THE H.M. SAWYER & SON CO.
Cambridge, Massachusetts
For more facts, circle No. 326

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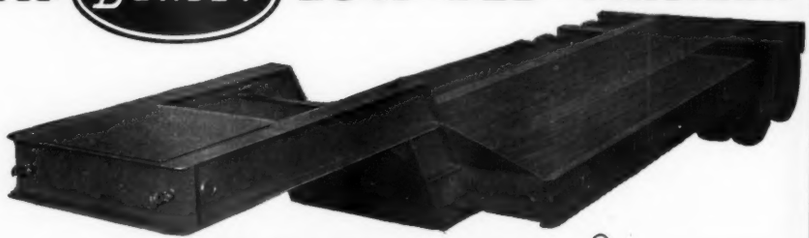
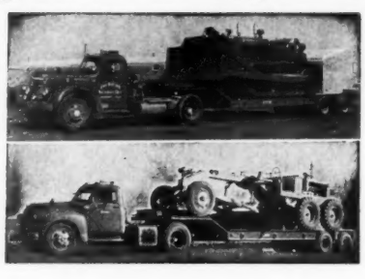
So Light, to be so Strong

THE NEW DORSEY LOW BED TRAILER



Now, a 20-ton trailer weighing only 8,250 pounds cuts operating costs and gives busy heavy haulers more loads within legal limits. High tensile steel main channels and close-spaced all-welded cross members give extra strength to the Dorsey HTS series of low bed trailers also available in 15, 25, 30 and 35-ton capacities. Flat-type gooseneck steps up efficiency and versatility. Wheels in tandem "walk" on stub axles over rough terrain, pull easily on highways.



Typical loadings show versatility of flat-type gooseneck Dorsey HTS low bed trailers which are delivered ready for work with brakes, recessed lights, tool box as standard equipment. Grader ramps are optional at extra cost.

SEE YOUR DORSEY DISTRIBUTOR OR CONTACT
DORSEY TRAILERS SALES-SERVICE
DORSEY TRAILERS ELBA, ALABAMA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 328

Compaction: testing on the job

Good preliminary analysis helps compaction results when its lessons combine with field conditions

Soil testing on the job is vital to a good fill, the same as good compaction equipment is. These technicians on an Idaho project are helping to correlate the application of equipment to the results the engineers desire.

by EARL B. MALOON, Manager,
Construction Machinery Division
Southwest Welding & Manufacturing Co.
Alhambra, California

and RAY DAY

It's a mistake for practical field men to attempt to understand all the complex ramifications of soil testing. It's also a mistake for soil testing experts to underestimate the importance of changing field conditions. The best compaction results always are obtained when trained soil experts analyze soil characteristics in advance of the job, when good equipment and trained men handle the dirt, and when the two factions work together as a team. This alone gives the desirable set of checks and balances needed on today's highly developed soil foundation.

Each group has its place. Each is necessary to the other if best results are to be developed. And since the detailing of various types of soil testing in main laboratories would take several volumes to describe—and which already exist in Highway Research Board, USBR and Corps of Engineers pamphlets for the serious-minded research man—no attempt will be made here to labor overlong on this point, except as it relates to practical soil compaction.

One of the most intelligent soil compacting agencies in the country is the Army's Corps of Engineers. It's an outfit which does many types of compaction for many purposes: dams, airfields and roads. Here's how that agency worked recently when an important job involving soil compaction came up at the Rittenhouse Auxiliary of Williams Air Force Base, Arizona:

Thorough preliminary analysis

Immediately following authorization of the job, the Army's main west-coast laboratory at Sausalito, California, went into action with engineers at the Arizona field. They called for a sample of subgrade soil. Trained men skilled in taking representative samples shoveled up about 400 pounds, sacked it up in three or four big bags, and shipped it to Sausalito.

Classification and mechanical analysis tests were made first. Grain sizes were actually measured. Grain size distribution then was calculated carefully by (1) screening the air-dried sample on sieves to establish the grading of the coarser sizes, and (2) by washing a representative portion of material smaller than ¼ inch in size on a sieve whose mesh openings were No. 200, or 1/200th inch. The sample before washing had been oven-dried and then slaked in water overnight. A dry-sieve analysis then was made on the portion retained on the No. 200 sieve. Combined with the early test on the coarse fraction, this analysis tied the soil gradation down much closer than any visual examination,

(*Continued on next page*)

For more facts, circle No. 329→

High-speed dozers hit of the show

On 17 million dollar Thruway Section

Two Tournatractors are kept busy on this 5,100,000-yard section of the Thruway. Unit above is being used to clean up around shovels and help maintain dumps.

A $17,440,000 contract for constructing 12.8 miles of the New York Thruway—the largest dollar volume dirtmoving contract ever awarded in New York State—has been granted to a combination of 3 contracting firms, Mount Vernon Contracting Company, S. A. Healy Company and M. A. Gamino.

These 3 firms are working in the Ramapo Mountains about 10 miles north of the New York-New Jersey state line. They are moving 1,700,000 cu. yds. of rock and 3,400,000 cu. yds. of common earth. Seven of the 12.8 miles of highway are being carved out of solid rock. Cuts range up to 100 feet deep and 250 feet wide. Nine highway and railroad grade separations must be constructed. Many miles of drainage facilities must be installed. And, the Ramapo River which often has flooded hundreds of acres in the Thruway's right-of-way, has to be diverted and its channel relocated.

Tournatractors speed scattered dozing

While a fleet of Scrapers and trucks is moving the bulk of the yardage, hit of the big job has been 2 rubber-tired Tournatractors which have given Mount Vernon-Healy-Gammino a fast way of handling scattered tractor work.

One of these high-speed machines works for the drilling crew. It strips rock, hauls compressors and wagon drills, backfills trenches, patrols roads to keep them clear of rock, removes trees and brush to prepare drill sites, and handles a wide variety of other scattered dozing and pulling assignments.

The second Tournatractor works in the rock cut, cleans up around 2 shovels, and helps maintain a rock dump. Both units, with their big low-pressure tires, travel anywhere at speeds up to 19 mph — over pavement, tracks, cross-country. With this speed, they often finish an assignment before a crawler could be well on its way. Their tires flex to roll harmlessly over rock which would damage crawler tracks. The tires outwear dual truck tires, too . . . there's no divided face for rocks to wedge in, wear, and tear . . . no thin carcasses to break under sudden strain.

"These Tournatractors," says Foreman Edward Termunde, "are our errand boys. They go anywhere fast . . . haul equipment fast . . . get out stuck trucks fast . . . clean up around shovels fast! I like them very much!"

Company's second Tournatractor levels rock from around drill sites, and handles a variety of other pushing and pulling assignments. Operator Maurice LeMay is enthusiastic. "Tournatractors are very easy to run," he says. "Very maneuverable, too. You can get them from place to place in a hurry."

Ask for more information

By now, you've probably read quite a few reports like this on rubber-tired LeTourneau-Westinghouse equipment. Isn't it about time you checked what these machines could do on your job? Write or call us. We'll be glad to demonstrate the Tournatractor for you.

Tournatractor—Trademark T-607-H-b

LeTourneau-WESTINGHOUSE Company
Peoria, Illinois
A Subsidiary of Westinghouse Air Brake Company

(Continued from preceding page)

however expert, could have done.

Atterburg tests for liquid limit and plastic limit then were made on representative portions of the sample. These tests, fully described under ASTM sections D423-39 and D424-39, respectively, are considered by many soil experts to have utmost importance. The "PI" or plasticity index of material is extremely important in determining its load-bearing stability, particularly under the pounding of heavy traffic. One of the deans of highway research engineers, Ernest B. Bail of the New Mexico State Highway Department, said several years ago, "PI is everything. I don't give a darn about the theory of particle size, but give me material with a low PI and I'll show you material fit to put in a construction job."

The next time you hear an engineer reject a borrow pit because "the PI is too high" he means this: the soil simply has too much mobility; too much lubrication. If its particles are rounded, if too much plastic clay is present so that the soil distorts readily under a load, its PI is usually too high. Well-graded crushed rock often shows a zero PI. By contrast, some of the blue marls of Texas and Louisiana have PI's up to 120. They resemble Liederkranz cheese, and are just about as stable in a fill.

In-place sampling is being done here by core-boring through a hot-mix asphalt paving into the soil beneath. That will show how soil behavior beneath is related to surface failures.

Final testing at Sausalito consisted of a California Bearing Ratio test, which is a measure of soil bearing strength. Full details on this method are given in the Army's Engineering Manual for Military Construction, Appendix B, Part XII, Chapter 2. The test is simple: it consists basically of measuring actual bearing values with a steel plate of known area, loaded with a known load. Density curves with varying moisture content also were plotted.

From these tests, the Sausalito laboratory sent out typical characteristics for the guidance of men in the field, and gave them this brief but cogent report:

"The soil was a sandy clay of low plasticity. The material produced a maximum density of 128 pounds per cubic foot at an optimum moisture content of 9 per cent. The soil exhibits swells of almost 2 per cent when specimens are molded dry of optimum: As noted on Plate 2, the best CBR values are achieved when the material is molded at about optimum moisture.

"If a density of 95 per cent is maintained and placement moisture controlled between 7 and 10½ per cent, a CBR of 19 may be used in design. A CBR of 15 is suggested for design criteria if field moistures are controlled between 7 and 11 per cent and only 93 per cent of maximum density achieved during construction. Test specimens molded at higher densities showed appreciable loss of stability when containing initial moistures above about 10 per cent."

Can you see from this report how that extra 2 per cent between 93 and 95 per cent pays off? In this case, as in most cases, the development of 2

Super **VULCAN**
Differential Acting Pile Hammers Drive Toughest Piles

Positive action . . . simple design . . . rugged strength. Specialized power for driving the heaviest, longest and most difficult piling.

Write today for complete details and name of nearest dealer . . .

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 330

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AMAZING BALANCE on front or rear wheels alone gives you *a new degree of maneuverability!*

No other heavy-duty concrete cutter can compare with the new Felker Model 254! See what *maneuverability* is really like! Quickly gets into and *out of* the tight spots, does all jobs without mankilling effort, turns in its own length! See how Blade-Saver Collars stretch out blade life! Try the "254" today . . . Ask for demonstration from your nearest Felker distributor!

NEW FOLDER GIVES DATA— Before buying any concrete cutter get these facts! They'll convince you here's the *best* buy in the whole field!

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Model 254
CONCRETE CUTTER
• 25 H.P. WISCONSIN!
• NEW "BLADE-SAVER" COLLARS! Pat. App. For. Trademark Reg.
• SELF-PROPELLING DRIVE!
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• BUILT-IN COOLANT PUMP! Many other features!
COLOR FILM AVAILABLE! For club and society programs request our 25 minute automatic strip film "DIAMOND MINING IN SO. AFRICA" with 33-1/3 long play record!
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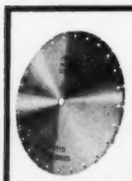

Felker Di-Met SEGMENTED TYPE BLADES

Preferred for maximum footage at lowest cost-per-cut. Wide range of bond variations for maximum life under every condition! Ask also about the new Felker Abrasive Blades for cutting green concrete, where applicable.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 331

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MODELS 272-C & 363-C FOR MOBILE STATIONARY & MARINE ENGINES

With up to 3 & 4 Gal. Crankcase Capacities

NOTE: All Luber-finer Models may be used on engines larger than recommended; however, the Pack life will be proportionately shorter.

CHECK ALL THESE EXCLUSIVE LUBER-FINER FEATURES

- ***SINGLE BOLT CLOSURE***— Ingeniously designed Clamping Ring utilizes Single Bolt Closure for quick, easy Pack Replacement.
- ***POSITIVE SEALING GASKET***— Long-lasting "O" ring type gasket assures leak-proof lid closure at all operating pressures.
- ***POSITIVE PACK SEAL***— An outstanding feature that eliminates the possibility of oil ever by-passing the Luber-finer pack.
- ***DUAL SAFETY VALVES***— Prevents oil drain-back, assuring exact crankcase oil level reading at all times, stops oil from circulating through unit if lines are reversed or if the Luber-finer Unit is otherwise improperly installed.

Luber-finer Units are Standard and Optional Equipment on America's Leading Diesel Trucks, Tractors and Stationary Engines

AND DON'T FORGET! For Luber-finer's Engineered Protection — Be Sure There is a Genuine **LUBER-FINER PACK INSIDE!**

Only a Luber-finer Unit plus a Genuine Luber-finer Pack can give you the Exclusive Patented Filtering Process that has made Luber-finer the Standard of the Industry since 1936!

For Complete Information Write Dept. **601**

LUBER-FINER, INC.
2514 S. Grand Ave., Los Angeles 7

For more facts, circle No. 332

per cent more density by the field men will permit the designers to save money on pavement and sub-base.

Modified vs standard tests

The purpose of Standard and Modified AASHO or Proctor tests is simply to measure density by known yardsticks of compactive effort. The Modified tests are harder to get in the field for a very simple reason. More compactive effort is applied in the laboratory for their development, so correspondingly higher type work must be done in the field to reproduce these results.

The Standard AASHO test simply molds compacted soil in a cylinder according to a definite yardstick. Three lifts are made to fill the cylinder. There are two sizes of cylinder, but for direct comparison purposes let's use the biggest size, which measures 6 inches in diameter and 4½ inches high. Each layer then is tamped by using 55 blows of a 5½-pound hammer, falling through a free drop of 12 inches.

The Modified AASHO test is a lot tougher. Five layers instead of three are used. The hammer for the Modified test weighs 10 pounds, and drops 18 inches instead of 12. The number of blows, 55, is the same as the Standard test for a cylinder of this size. But the compactive effort is so much greater on the Modified test that a much denser result is developed in relation to the percentage shown. That's why densities of 95 to 100 per cent of Modified AASHO cause smart contractors to buy the best heavy-duty compaction equipment and give plenty of thought to pre-watering and soil blending before they move into a job. It's simply impossible to build these high-type fills with equipment the firm may have used successfully on a county road job or a small dam.

Field testing

The entire purpose of an intelligent field testing program is to do these things:

a. To observe soil conditions and make new tests if soil characteristics change from the original sampling.

b. To measure in-place density and bearing value of compacted work in the field, and to change compaction methods if results so warrant.

c. To correlate results in terms of the earthmoving and compaction potential on a job, so that the contractor's equipment spread *will be allowed to produce at its maximum performance if it can deliver the specified results while so doing.* This obligation on the part of testing technicians too often is overlooked, and closer attention will do much to lower the cost of earthwork.

In short, the field technicians simply study and verify the earlier exhaustive tests made on the soil in complete laboratories under absolute control. By working closely with operators, foremen and superintendents, these men can do much toward getting whatever degree of compaction is wanted. Nowhere on a fill is an intelligent combination of scientific and practical thinking needed more than in the mind of the field technician.

For more facts, circle No. 333→

Soil science will undoubtedly develop a long way in the immediate years to come, chiefly because there's so much room for improvement. There are still too many opposing viewpoints; too many yardsticks. There is a lack of precise definition.

Some day soon, perhaps, every expert on soils will agree to forget his own particular cherished theory, and to pool his knowledge for the development of one common soil testing denominator. Gone will be the Standard AASHO Test, possibly even the Modified Test, and all the other semantic definitions which have done so much to confuse the man in the field. There will be one and only one soil test to measure moisture, density, shear value, bearing power, grain size, specific gravity, and all the other factors which enter into compaction. Every man really interested in soil as a construction material should do his utmost to bring that about.

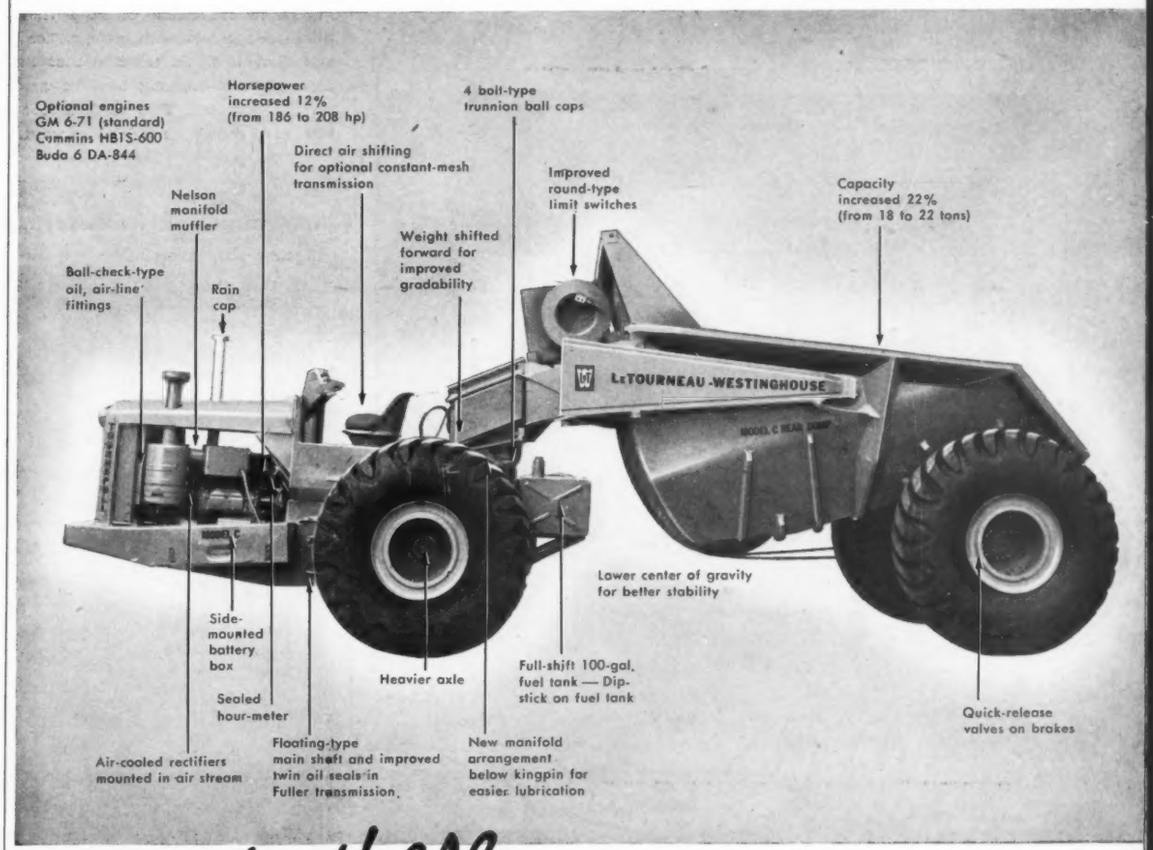
Only by simplifying the entire process, in terms the vital field part of the team can understand and work with, will earthmoving and compaction reach its zenith. THE END

Remember—Safety is no accident. The life you save may be your own.

I-H personnel changes

The Motor Truck Division, International Harvester Co., announces three transfers and a promotion.

Barr Crawford, district manager at Pittsburgh, Pa., has been transferred to St. Louis, Mo., in the same capacity. H. A. Herman replaces Mr. Crawford. M. J. Gowen, district manager at Richmond, Va., has been moved to Fort Wayne, Ind., as district manager. R. W. Maxwell, M. T. Sprague, and G. S. Stewart are the new district managers in Richmond, Va.; Oakland, Calif.; and Portland, Oreg.; respectively.


Optional engines
GM 6-71 (standard)
Cummins HB1S-600
Buda 6 DA-844
Horsepower increased 12% (from 186 to 208 hp)
4 bolt-type trunnion ball caps
Direct air shifting for optional constant-mesh transmission
Improved round-type limit switches
Capacity increased 22% (from 18 to 22 tons)
Nelson manifold muffler
Weight shifted forward for improved gradability
Ball-check-type oil, air-line fittings
Rain cap
LeTOURNEAU-WESTINGHOUSE
Lower center of gravity for better stability
Side-mounted battery box
Heavier axle
Full-shift 100-gal. fuel tank — Dip-stick on fuel tank
Sealed hour-meter
Quick-release valves on brakes
Air-cooled rectifiers mounted in air stream
Floating-type main shaft and improved twin oil seals in Fuller transmission
New manifold arrangement below kingpin for easier lubrication

Check these rear-dump improvements

Greater Capacity . . . Greater Horsepower . . . Better Grade Climbing . . . Fewer Trouble Spots . . . these are among the many improvements new engineering provides in today's C Tournapull Rear-Dump. The complete list is shown above. All are standard on current production models at no extra cost. They make this perfected hauling unit well worth your review and careful study. May we help you analyze the economies it can give you?

Tournapull—Trademark Reg. U.S. Pat. Off. R-825-G-b

Works fast in tight quarters — 90° turns plus power steer, quickly position 11' x 9' "big target" body under shovel dipper and speed spotting on dump. No switching back and forth, no turntables.

Reduces maintenance — Because Rear-Dump has no hydraulics, no jack lines, no long drive-shaft, no frame, sub-frame, springs or tie rods, most common troubles of conventional rear-dump haulers are eliminated.

Insures future earnings — Behind Tournapull prime-mover, you can interchange scraper, bottom-dump, other trailing units. With them, you keep profitably busy . . . can handle any type of future operation.

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

WEATHER CHARTS

The weather outlook for January

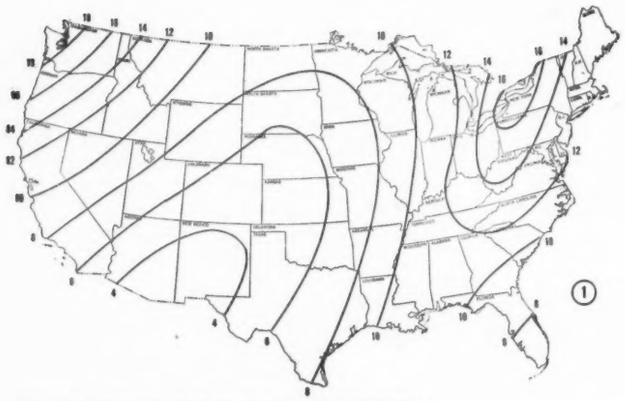


Chart 1. Days with .01 inch or more of precipitation.

Chart 2. Days with 1 inch or more of precipitation.

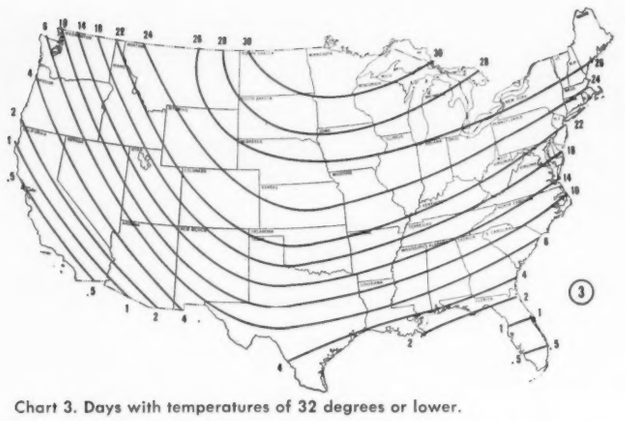


Chart 3. Days with temperatures of 32 degrees or lower.

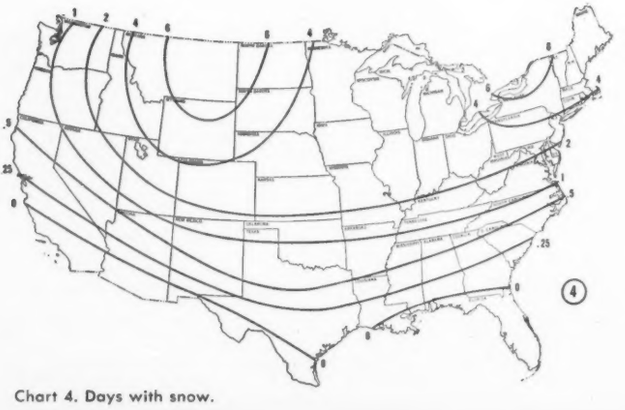


Chart 4. Days with snow.

The accompanying four maps, showing the average weather conditions that might be expected during January, indicate the average number of days with precipitation, the number with temperatures of 32 degrees or lower, and the number of days with snow. The frequency of each condition in the course of the month is indicated by black lines. When this is represented by a decimal value, such as .5, .25, and .1, the condition is expected to occur only once every two, four, or ten years, respectively.

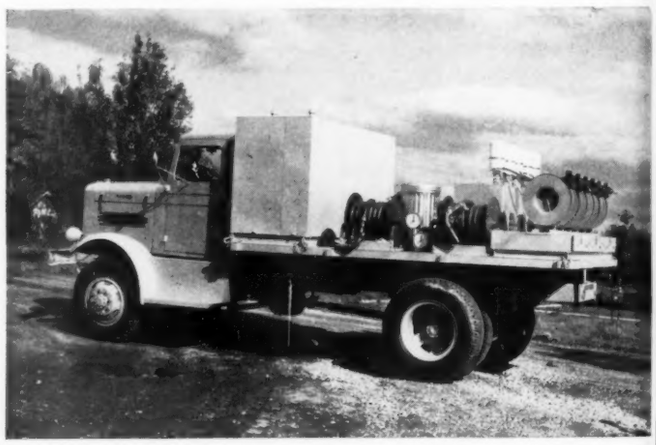
A contractor in Dallas, Texas, who cannot work on days with any precipitation or on days when temperatures reach 32 degrees or lower, would find from consulting Chart 1 that there are six days with precipitation, and Chart 3 would tell him that 12 days of below-freezing temperatures can be expected. This gives him a total of 18 days when he cannot work. Since snow rather than rain is more likely to accompany freezing temperatures, it is possible that the two conditions might occur on the same day and thereby give him more working days. Checking Chart 4 for the number of days with snow, he will find that the condition occurs only once every two years, indicating that precipitation seldom occurs when temperatures reach freezing or below. The estimate of 18 nonworking days is good, and the contractor must plan his work for the remaining 13 days in the month.

These charts, prepared for CONTRACTORS AND ENGINEERS by Weather Corporation of America, New York, N. Y., represent only average conditions that might be expected and are not intended to be specific forecasts. Based on weather records of the past 60 to 80 years, these charts may be retained for future use.

Joint materials firms form new association

A new trade association, the Associated Manufacturers of Premolded Joint Materials, has been organized in Chicago, Ill.

Officers, members of charter-member manufacturers, are: F. W. Lagerquist, the Celotex Corp., president; Wallace Fischer, Serviced Products Corp., vice president; W. R. Meadows, Sr., W. R. Meadows, Inc., treasurer; and J. E. Poole, Keystone Asphalt Products, secretary. With the exception of the Meadows firm of Elgin, Ill. all companies are in Chicago.



Compact lube unit keeps things running smoothly

Using this CEMCO Lubricating Truck to deliver fuel for gasoline and diesel engines, lubricating oils and greases, compressed air, will noticeably affect both down-time and overall maintenance expense.

Through a 30½′ hose on each of six different reels all lubricants and fuels are metered and delivered without loss—without muss. Diesel fuel tank holds 400 gallons—gasoline tank—200. Oil and lubricant tanks are 400# capacity—each with fuel pump. High pressure grease has two hose reels to speed servicing.

Study your 1956 projects—include this unit in your budget—start the savings now!

Write for complete specifications and prices!

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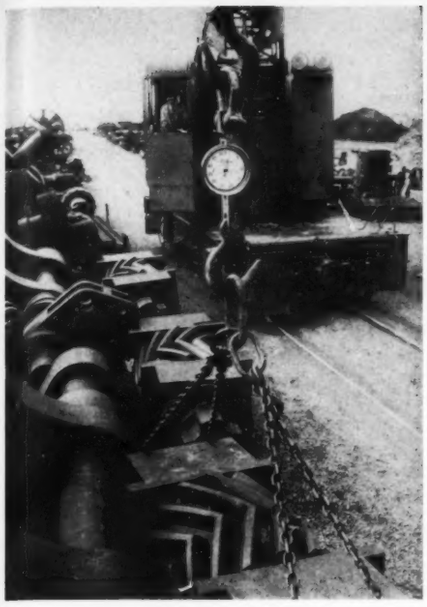
For more facts, use Reader-Reply Card opposite page 18 and circle No. 334



The Dillon dynamometer, positioned in direct series with the load, gives the operator a dependable safeguard against excessive loads.

Scale device prevents overloading of crane

■ The danger of a crane's dumping as a result of lifting a load in excess of its actual capacity is said to be eliminated with a traction dynamometer manufactured by W. C. Dillon & Co., Inc., 14620 Keswick St., Van Nuys, Calif.

Used as a scale, the Dillon dynamometer is positioned between the crane's lift hooks—directly in series with the load. The large, easily-read dial instantly indicates to the operator if the load is beyond the weight-radius capacity of the crane.

The instrument is available in 13 range models, with maximum capacities ranging from 500 to 100,000 pounds. All are reported to withstand accidental overloads of up to 25 per cent without injury to calibration. Either 5 or 10-inch dials are available on range models up to 20,000, while 10-inch dials are standard on 30, 40, 50, and 100,000-pound models. Dials are covered with shatterproof plastic crystal.

For further information write to the company, or use the Request Card at page 18. Circle No. 104.

Wisconsin Motor appoints

The new assistant sales manager of the Wisconsin Motor Corp., Milwaukee, Wis., is Tom Barrett. A sales representative of the firm for the past seven years, Mr. Barrett will be responsible for sales and promotion of heavy-duty air-cooled engines.

STARTING POINT FOR A SOUND, PROFITABLE OPERATION

Select the right equipment, and you're on the right track for a sound, profitable operation. In an asphalt plant ... the right equipment is MADSEN. MADSEN Asphalt Plants are designed and built from the owner-operator point of view. The MADSEN Model 481, for example, has more than 25 special features and advantages to help you turn out bituminous mixes at a faster, sustained rate ... to help make the plant operator's job easier ... and to lower plant maintenance costs.
For the big road-building months and years ahead, be sure you start with the right equipment. Take the first step, and talk with your MADSEN Distributor now.

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MADSEN WORKS
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Ask your MADSEN Distributor for complete details

BLH Construction Equipment Division

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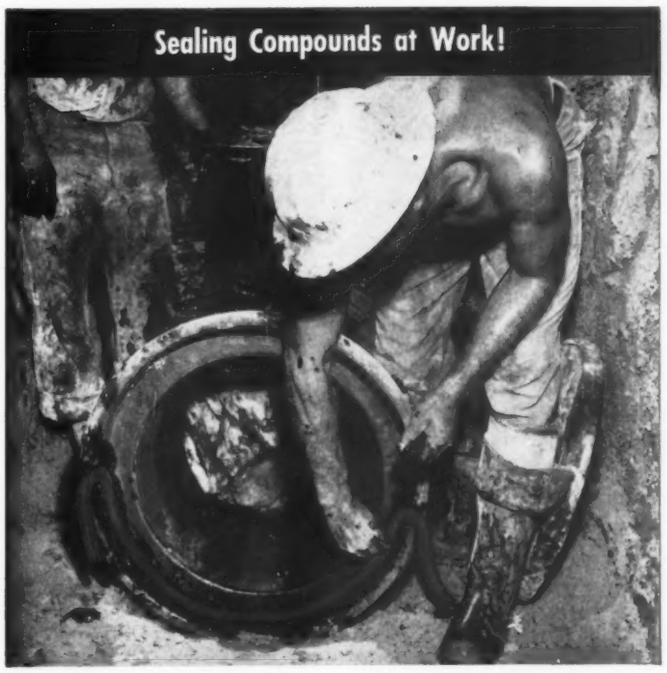

PRESSTITE'S *cold applied 3-step sewer joint sealing system*

Prevents Overloading Sewage Disposal Plant

Extensive ground water infiltration can overload planned capacity of the disposal plant, resulting in serious trouble and expense. To prevent this, engineers specified Presstite's 3-step system to seal the recent 17-mile Decatur, Ill., sewer project.

Developed through extensive research, Presstite's economical proven system insures tighter, more dependable joints with three simple steps:

1. Presstite PRIMER ... painted on bell and spigot ends before laying pipe, provides a better bond.
2. Plus Presstite ROPAX® ... non-porous packing provides *additional* joint sealing material, forms solid seal impervious to passage of water.
3. Plus Presstite KALKTITE® ... cold mixed, cold applied asphaltic cement completes sealing. Sets up under the most adverse conditions, forms dense, tough, flexible seal that *keeps water out!*

It's as simple as 1-2-3! You get tighter joints plus saving time and money with Presstite's 3-step system.

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WRITE TODAY
for 20 page detailed catalog, samples and prices.

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3788 Chouteau Avenue St. Louis 10, Mo.

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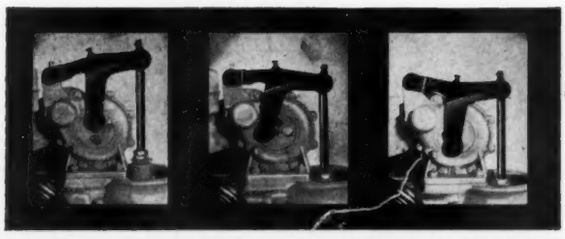
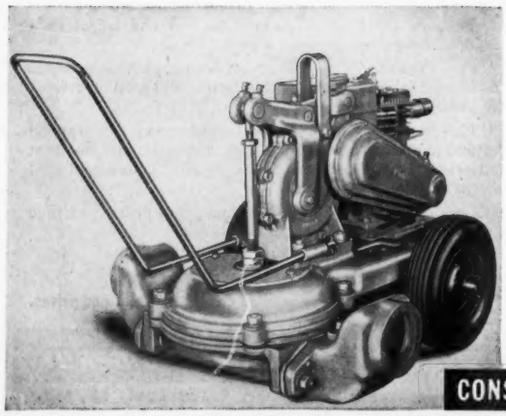


Exclusive variable-speed, vertical-stroke plunger design makes this pump outperform, outlast all others!

New CMC SKWEE-GEE Diaphragm Pump



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SKWEE-GEE primes dry at 25 feet. Total heads up to 40 feet. Standard plunger stroke 3" with alternate 2¾" by simple adjustment. Lightweight, more compact, easier to move about. Write for Bulletin FD-L3.

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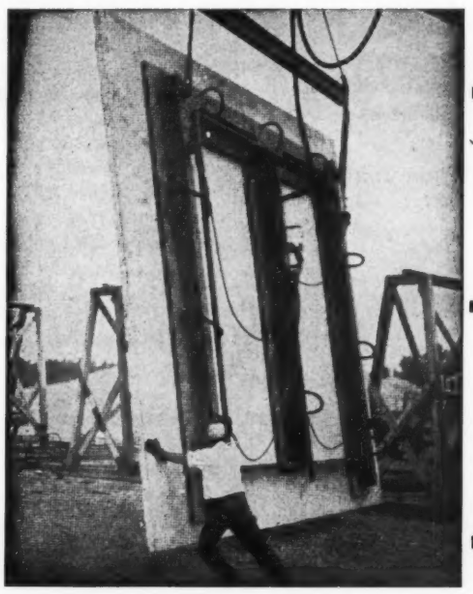
Wisconsin Motor Corp. ... 75
Paulson-Gerlach & Associates, Inc.

For more facts, circle No. 339→

MAGIC CARPET for Concrete Handling



THE VACUUM LIFTER

No inserts or strongbacks to adjust . . . a turned valve does the work. Harnessed atmospheric pressure provides temporary reinforcement — eliminates point stresses and the need for additional steel.

EARLY STRIPPING — EARLY ERECTION

VACUUM CONCRETE, INC.
4210 Sansom Street • Philadelphia, Pa.

Contractor: Concrete Casting Co., Kansas City, Mo.

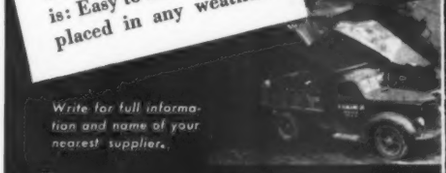
For more facts, use Reader-Reply Card opposite page 18 and circle No. 338

Repair
WINTER DAMAGE
BEFORE IT GETS WORSE
use **kotal**
STOCKPILE MIX

WINTER ROAD REPAIRS, made with KOTAL STOCKPILE MIX, have these advantages:

- PERMANENT
- NO STRIPPING
- TOUGH
- TRUE ECONOMY

KOTAL STOCKPILE MIX is: Easy to use . . . can be placed in any weather.



Write for full information and name of your nearest supplier.

kotal COMPANY

MANUFACTURER MEMOS

G. E. Burks is elected Caterpillar vice president

The former director of engineering and research at the Peoria, Ill., plant of the Caterpillar Tractor Co., G. E. Burks, has been elected a vice president of the firm. He will direct the research and engineering departments at four Caterpillar plants.

G. E. Burks, recently elected vice president of the Caterpillar Tractor Co.

A member of the American Society of Mechanical Engineers, Burks has been with Caterpillar 26 years. He first worked on the company's engineering staff at San Leandro, became assistant chief engineer in charge of engine design in 1938, and chief engineer in 1942. He was named director of engineering and research for the company in 1954.

R. C. Brown has been named director of research, and J. M. Davies and C. R. Maxwell have been named assistants to Burks. R. D. Henderson and C. H. Stein have been promoted to assistant directors of research on engines and engine development, respectively. Succeeding Henderson as manager of the engine development laboratory is G. M. Johnson.

Other Caterpillar promotions include Dale Wright, chief metallurgist at the Peoria plant; T. H. Spencer, plant metallurgist; and T. W. Peck, manager of the heat treat division.

Dr. Conner is appointed to Material Testing Reactor

Dr. Willard P. Conner, manager of the physics division of Hercules Powder Co.'s experiment station, Wilmington, Del., has been granted a leave from the company to serve as acting technical director of the Material Testing Reactor operated at the National Reactor Testing Station near Arco, Idaho. For the past few years, Dr. Conner has been a member of the Advisory Committee on Reactor Safeguards.

Dr. Arthur F. Martin will serve as acting manager of the division during Dr. Conner's absence.

Waukesha names new executive

Charles E. Nelson has been appointed secretary and treasurer of the Waukesha Motor Co., Waukesha, Wis. He had been vice president in charge of production prior to his present appointment.

Charles E. Nelson, recently appointed secretary and treasurer of the Waukesha Motor Co., Waukesha, Wis.

Starting with the Fageol Truck & Motor Coach Co., Oakland, Calif., then a Waukesha subsidiary, Mr. Nelson became secretary and treasurer of that firm in 1933. Since then he has held a number of other executive positions with the parent firm, including factory production manager, director of purchases and production planning, and assistant to the president.

Worthington Corp. makes executive appointments

Last month, George F. Habach took office as vice president in charge of engineering for Worthington Corp., Harrison, N. J., assuming administrative responsibility for engineering activity, including research and development. Harry A. Feldbush, former vice president in charge of engineering, will continue as a consultant on special engineering problems.

Ralph G. Griffin has been named manager of the company's Cincinnati district office. He succeeds Earle W. Vinnedge, now special representative of the Cincinnati office.

Houser elected treasurer of H. K. Porter Co.

Robert C. Houser has been elected treasurer of H. K. Porter Co., Inc., New York, N. Y., to succeed James C. Leslie who has resigned. With Porter a little more than a year, Mr. Houser was formerly assistant treasurer of the firm.

Replacing Mr. Houser as assistant treasurer is Rocco J. DiFonso. Edward R. Moran has been appointed secretary.

←For more facts, circle No. 340

You Can Do It Better With an Austin-Western Power Grader

Whatever the job . . . or season . . . or ground condition . . . it's CONTROLLED TRACTION (the exclusive combination of All-Wheel Drive and All-Wheel Steer) that licks 'em all.

On Austin-Western Power Graders there are no idling front wheels — no dead front end to consume power and decrease efficiency. Every pound is working weight — contributing 100 per cent to traction and delivering maximum power where it counts — at the blade.

Driving, steerable wheels at the rear, teamed up with the live climbing power of Austin-Western's famous front truck, provide flotation and tractive effort ordinary motor graders cannot hope to equal.

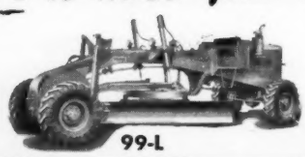
Spring and Summer, Fall and Winter, A-W Power Graders outperform all others . . . on all types of work, and under all conditions. Torque Converter Drive — available in all models — makes these . . .

THE HOTTEST MOTOR GRADERS ON WHEELS

NOW THERE ARE FOUR to meet your every need

88-L

Super 88


99-L

Super 99

Austin-Western
Power Graders · Motor Sweepers
Road Rollers · Hydraulic Cranes
Construction Equipment Division

Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.

Ralph A. White new general manager of Eagle Crusher Co.

Eagle Crusher news

Eagle Crusher Co., Galion, Ohio, manufacturer of truck-mounted loaders, jaw crushers, and hammermills, has made Ralph A. White general manager. He is the former manager of the farm machinery division of Perfection Steel Body Co., the firm that acquired the controlling interest in Eagle.

Syntron Sales changes

Sales of Syntron vibratory equipment, paper joggers, power tools, conveyors, rectifiers, shaft seals, and other industrial equipment will be handled by Preston Williams, who has been appointed to Syntron New York Sales Co.

A new power tool and jogger salesman assigned to the Syntron Irvin Sales territory, Pittsburgh, and western Pennsylvania is Bradford H. Voltz. Mr. Voltz will work from the home office at Homer City, Pa.

Andrew L. Fraekle has joined Syntron Cincinnati Sales Co., Cincinnati, Ohio, as a student salesman, and Leonard R. Felke has joined Syntron Chicago Sales Co. as a vibratory sales trainee. Syntron Reading Sales Co. has named William R. Robinson district salesman of shaft seals, heating elements, and rectifiers in northeastern Pennsylvania. E. W. Rasmussen is the new district salesman for Syntron San Francisco Sales Co. R. L. Patterson has been assigned to the Syntron Buffalo Sales Co., and will handle the company's line in four New York counties.

In West Virginia and Virginia, Earl K. Gardner will sell vibratory equipment, power tools, and shaft seals. Mr. Gardner will also serve as district manager of Syntron Pittsburgh Sales Co., with headquarters in South Charleston, W. Va.

R. Dankert joins Lippmann

Robert Dankert has joined the sales force of Lippmann Engineering Works, Milwaukee, Wis., manufacturer of crushing, screening, and conveying machinery. Mr. Dankert will represent the company in New York State, the New England states, and western Pennsylvania.

Atlas Powder engineer to serve as security aide

Earl R. Lutz, materials-handling engineer with Atlas Powder Co., Wilmington, Del., has been appointed to the Materials Handling Advisory Committee of the National Security Industrial Association. A mechanical engineer, Mr. Lutz has been with Atlas since 1941.

Executive changes at Joy

A series of executive changes have been made by Joy Mfg. Co., Pittsburgh, Pa. Robert M. Van Tassel, appointed head industrial designer attached to the Pittsburgh executive staff, will recommend style advances on new and existing products.

Herman Van Houten, former staff specialist and special representative for the Pittsburgh executive sales department, is now sales manager in charge of renewal parts. Managing continuous miner and loader products is R. T. Hair, formerly manager for all company products.

Joy's Franklin, Pa., plant has named W. Kenneth Baird manager of manufacturing; J. W. Woolf assistant chief engineer, administrative; and C. W. Fitzgerald, assistant chief engineer, product design.

In another change, Joy has moved its Detroit, Mich. office to 17615 W. McNichols Road. This office incorporates the new Joy Detroit warehouse.

New Hyster managers

The Hyster Co., Portland, Oreg., has appointed Daniel J. Sheehan general parts and service manager of the Portland plant. Mr. Sheehan was formerly chief mechanical officer of the Chicago and Eastern Illinois Railroad.

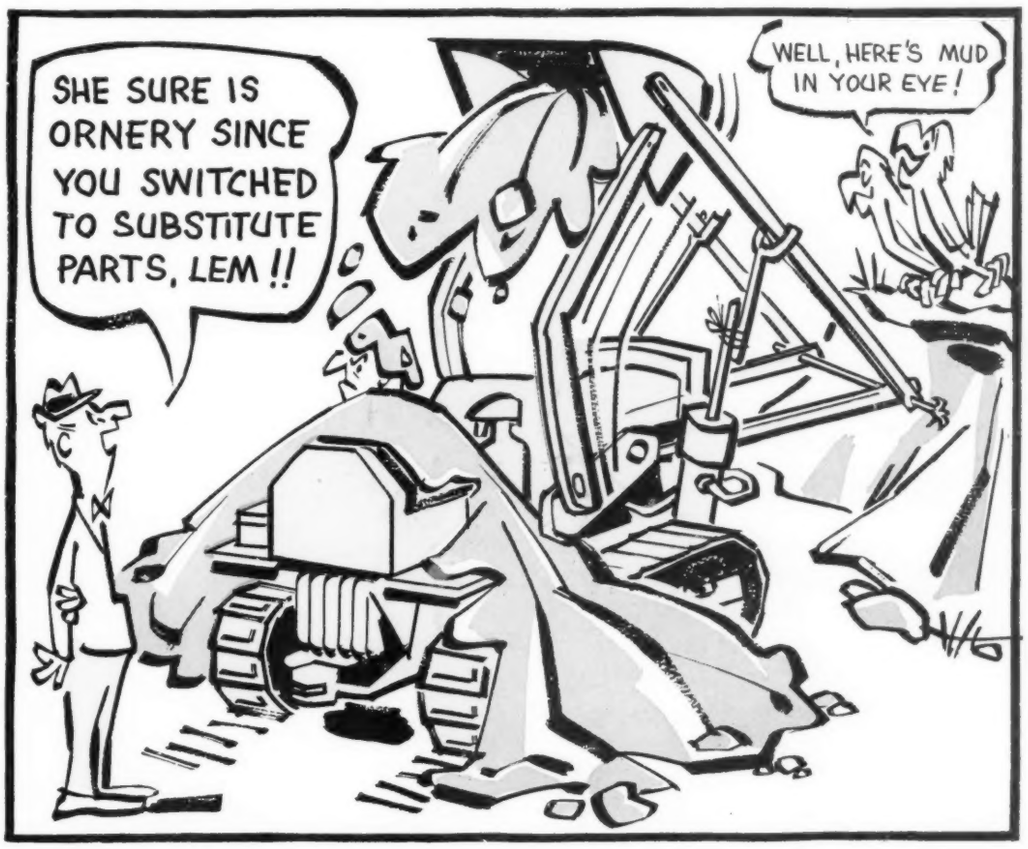
James L. Woodley, a member of the Hyster organization for ten years, is the new manager of the company's Danville, Ill., plant.

Heading the new merchandise division of the general sales department is Harold R. Lucas. He was administrative assistant in the general sales department.

U. S. Steel appoints two new executives

R. Conrad Cooper has been appointed vice president of administration planning for United States Steel Corp., New York, N. Y. Formerly vice president in charge of industrial engineering, Mr. Cooper will be responsible for the development and application of over-all programs and policies.

Succeeding Mr. Cooper as industrial engineering vice president is John E. Angle, the former general superintendent of Gary Sheet & Tin Mill.



Down time is no joke. It happens, though. Maybe when intake and exhaust valves go bad.

If you replace with genuine Caterpillar valves, here's what you're sure of: valves designed to *fit properly* in your Caterpillar engine, and that means heads held to amazingly close tolerances, stems accurately machined, keeper tapers precision-ground, faces machined true to the center line of the stem. You're sure of valves *hardened* for longer wear. All around, you're sure of *less* down time in the future.

If you replace with substitute valves—can you be sure of anything?

Better get genuine Caterpillar parts every time.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CAT valves are made of special nickel-chromium alloy steel. Even at high operating temperatures, they resist distortion, corrosion and erosion.*

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 341

2¼-yd. MICHIGAN 175A strips hot mix asphalt without scarifying . . .

This big POWERHOUSE handles bigger jobs cheaper!

Check the specs of the MICHIGAN* 175A:

BUCKET CAPACITY.....2¼ yds.
WEIGHT.....24,100 lbs.
LIFTING CAPACITY.....15,000 lbs.
SPEED..Up to 27 mph, Forward and Reverse
HORSEPOWER.....133 Diesel, 126 Gas, 165 Supercharged

Don't look for "comparative" data on the MICHIGAN 175A—there is *no machine comparable*. This big bruiser is nearly 50% bigger than the next closest machine on the market. From flywheel to bucket, the 175A is built to do bigger, heavier jobs—jobs that no other rubber-tired machine can handle.

Better traction and flotation With the MICHIGAN's exclusive power train—300% torque multiplication, power shift transmission (no engine clutch) and planetary wheel axles—you get a shockless flow of power right down to the ground. There's no surge, no wind-up in the axle shaft, no wild wheel-spin. The operator has feather-touch control over his wheels; in weak soil conditions or mud, he can ease off or step up the power to keep from digging in. With this kind of smooth power transmission, you get the full advantage of the MICHIGAN's extra weight and power—you dig material *out*, you don't dig the machine *in*.

Hydraulic power does the work In spite of its size and power, the MICHIGAN 175A is easier to operate than most machines one-third its size. Hydraulic power does all the real work: power steering, 4-wheel power brakes, power-shifting with two simple levers on the steering column, no clutch pedal.

See it in action! We'll prove that the MICHIGAN is in a class by itself in the Tractor Shovel field: your local MICHIGAN distributor will arrange a demonstration—on your own job, if you wish. Or write for 12-page Tractor Shovel booklet containing explanation and cutaway drawings of the MICHIGAN power train. Any MICHIGAN is available on a low-cost Lease Plan—ask for brochure which explains how you can use it.

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
384 Second Street
Benton Harbor 30, Michigan
Phone WA 6-6184

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 342